The content of Document SA-CATS 172 is hereby amended by transposing and substituting the ATS Standards and Procedure Manual (S&PM), which is currently published on the SACAA website, into Document SA-CATS 172 as Annexure F.

Note: *The S&PM on the SACAA website shall cease to exist on the date of Publication of this "Annexure F" and this Annexure F shall be applicable henceforth*.

"Annexure F: ATS Standard and Procedures Manual

ANNEXURE F

ATS STANDARDS AND PROCEDURES

INDEX

(a) the substitution for the Definitions in Annexure F of the following definitions:

Section 1 Glossary

Chapter 1 Definitions

A

Accepting unit/controller	Air Traffic Control Unit/Air Traffic Controller next to take control of an aircraft. *Note: See transferring unit/controller.*
Accident	Includes an occurrence associated with the operation of an aircraft which, in the case of a manned aircraft takes place between the time any person boards the aircraft with the intention of flight until such time as all such persons have disembarked, or in the case of an unmanned aircraft, takes place between the time the aircraft is ready to move with the purpose of flight until such time it comes to rest at the end of the flight and the primary propulsion system is shut down, during which— (a) a person is fatally or seriously injured as result of: -being in the aircraft; - direct contact with any part of the aircraft, including parts which have become detached or are released from the aircraft; or - direct exposure to jet blast, rotor or propeller wake, except when the injuries are from natural causes, self-inflicted or inflicted by other persons, or when the injuries are to stowaways hiding outside the areas normally available to passengers and flight crew; or (b) the aircraft sustains damage or structural failure which adversely affects the structural strength, performance or flight characteristics of the aircraft; and

- would normally require major repair or replacement of the affected component, except for engine failure or damage when the damage is limited to a single engine, (including its cowlings or accessories), to propellers, wing tips, antennae, probes, vanes, tyres, brakes, wheels, fairings, panels, landing gear doors, windscreens, the aircraft skin (such as small dents or puncture holes), or for minor damages to main rotor blades, tail rotor blades, landing gear, and holes resulting from hail or bird strike (including holes in the radome); or

(c) the aircraft is still missing after an official search has been terminated and the wreckage has not been located; or

(d) the aircraft is in a place where it is completely inaccessible.

ADS agreement

ADS reporting plan which establishes the conditions of ADS data reporting (i.e. data required by the air traffic services unit and frequency of ADS reports which have to be agreed to prior to the provision of ADS services)

Note: The terms of the agreement will be exchanged between the ground system and the aircraft by means of a contract, or a series of contracts.

ADS contract

A means by which the terms of an ADS agreement will be exchanged between the ground system and the aircraft, specifying under what conditions ADS reports would be initiated, and what data would contained in the report.

ADS-C agreement

A reporting plan which establishes the conditions of ADS-C data reporting (i.e. data required by the air traffic services unit and frequency of ADS-C reports which have to be agreed to prior to using ADS-C in the provision of the air traffic services).

	Note: The terms of the agreement will be exchanged between the ground system and the aircraft by means of a contract, or a series of contracts.
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.
Advisory airspace	Airspace of defined dimensions, or designated route, within which air traffic advisory service is available.
Advisory route	A designated route along which air traffic advisory service is available.
Aerodrome	A defined area on land or water (including any buildings, installations and equipment) intended to be used either wholly or in part for the arrival, departure and surface movement of aircraft.
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 traffic	All traffic on the manoeuvring area of an aerodrome and all aircraft flying in the vicinity of an aerodrome.
	Note: In this sense an aircraft is considered to be in the vicinity of an aerodrome when it is entering or leaving an aerodrome traffic circuit (5NM's)
Aerodrome traffic circuit	The specified path to be flown by aircraft operating in the vicinity of an aerodrome.

Aerodrome flight information service (AFIS)	A service provided by a radio operator on behalf of the ATS.
Aerodrome reference Point	The designated geographical location of the Aerodrome.
Aerodrome traffic zone	Controlled airspace at an aerodrome where aerodrome control, established for the protection of aerodrome traffic, is in operation as published in an AIP, AIC or NOTAM and designated as an aerodrome traffic zone.
Aeronautical fixed service (AFS)	A telecommunication service between specified points (AFS) 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.
Aeronautical ground light	Any light specially provided as an aid to air navigation, other than a light displayed on an aircraft.
Aeronautical information publication (AIP)	A publication issued by or with the authority of a State and containing aeronautical information of a lasting character essential to air navigation.
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 quick with SSR transponders.
Aircraft	Any machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against earth's surface.
Aircraft identification	A group of letters, figures or a combination thereof which is either identical to, or the coded equivalent of, the aircraft call sign to be used in the air-ground communications, and which is used to identify the aircraft in ground-ground air traffic services communications.

Aircraft observation	The evaluation of one or more meteorological elements made from an aircraft in flight.
Air-ground communications	Two-way Communications between aircraft and station or locations on the surface of the earth
Air report (AIREP)	A report from an aircraft in flight prepared in conformity with requirements for position and operational and/or meteorological reporting.
Air-taxiing	A movement of a helicopter / VTOL above the service of an aerodrome, normally in ground effect and at a ground speed normally less than 20 kts. *Note: The factual height may vary, and some helicopters may require air-taxiing above 25ft AGL to reduce ground effects turbulence or provide clearance for cargo sling loads.*
Air traffic	All aircraft in flight or operating on the manoeuvring area of an aerodrome.
Air traffic advisory service	Service provided within advisory airspace to ensure separation, in so far as practical between aircraft which are operating on IFR flight plans.
Air traffic control clearance	Authorisation for an aircraft to proceed under conditions specified by an Air Traffic Control Unit.
Air traffic control instruction	Directives issued by air traffic for the purpose of requiring a pilot to take a specified 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 control unit	A generic term meaning variously, area control centre, approach control unit or aerodrome control tower.
Air traffic flow management (ATFM)	The service established with the objective of contributing to a safe, orderly and expeditious flow of Air Traffic by ensuring that ATC capacity is utilised to the maximum extent possible, and that the traffic volume is compatible with the capacities declared by the appropriate ATS authority.
Air traffic management (ATM)	The dynamic, integrated management of air traffic and airspace (including air traffic services, airspace management and air traffic flow management) – safely, economically and efficiently – through the provision of facilities and seamless services in collaboration with all parties and involving airborne and ground-based functions.
Air traffic management system	A system that provides ATM through collaborative integration of humans, information, technology, facilities and services, supported by air and ground- and/or space-based CNS.
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).

ATS surveillance service	Term used to indicate a 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 SSR.
Air traffic services reporting office	A unit established for the office purpose of receiving reports concerning air traffic services and flight plans submitted before departure. *Note: An air traffic service reporting office may be established as a separate unit or combined with an existing unit, such as another air traffic services unit, or a unit of the aeronautical information service.*
Air traffic services unit (ATSU)	A generic term meaning variously, air traffic control unit, flight information centre or air traffic services reporting office.
Air traffic services airspaces	Airspaces of defined dimensions, alphabetically designed, within which specific types of flights any operate and for which air traffic services and rules of operation are specified. *Note: ATS airspaces are classified from A to G.*
Airway	A control area or portion thereof established in the form of a corridor.

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 land at the aerodrome of intended landing. Alternate aerodromes include the following: i) Take-off alternate - An alternate aerodrome at which an aircraft can land should this become necessary shortly after take-off and it is not possible to use the aerodrome of departure. ii) En-route alternate - An aerodrome at which an aircraft would be able to land after experiencing an abnormal or emergency condition while en-route. iii) Destination alternate - An alternate aerodrome to which an aircraft may proceed should it become impossible or inadvisable to land at the aerodrome of intended landing. Note: The aerodrome from which a flight departs may also be en-route or a destination alternate aerodrome for that flight.
Altitude	The vertical distance of a level, a point or an object considered as a point, measured from mean sea level.
Alphanumeric characters	A collective term for letters (Alphanumerics) and figures (digits).
Area control service	A service for controlled flights in control areas.

Area control centre (ACC)	A unit established to provide ATC Service to controlled flights in controlled airspace and advice and information to other flights under its jurisdiction.
Area navigation (RNAV)	Means a method of navigation which permits aircraft operation on any desired flight path within the coverage of ground or space based navigation aids or within the limits of the capability of self contained aids, or a combination of these. Note. - Area navigation includes performance-based navigation as well as other operations that do not meet the definition of performance-based navigation.
Area navigation route	An ATS route established for the use of aircraft capable of employing area navigation.
Approach control service	A service for arriving and departing controlled flights.
Approach control unit	A unit established to provide ATC Service to controlled flights arriving at, or departing from, one or more aerodromes.
Approach sequence	The order in which two or more aircraft are cleared to approach to land at the aerodrome.
Appropriate ATS Authority	Means the relevant authority designated by the Director as being responsible for providing air traffic services in the airspace concerned.

Appropriate authority	a) Regarding flight over the high seas: the relevant authority of the State of Registry. b) Regarding flight other than over the high seas: the relevant authority of the State having sovereignty over the territory being over flown.
Apron	A defined area, on a land aerodrome intended to accommodate aircraft for the purpose of loading or unloading passengers, mail or cargo, fuelling, parking or maintenance.
Apron management service	*A service provided to regulate the activities and the movement of aircraft and vehicles on the apron.*
ATS route	A specified route designed for channelling the flow of traffic as necessary for the provision of air traffic services. *Note: The term "ATS route" is used to mean variously, airway, advisory route, controlled or uncontrolled route, arrival or departure route, etc.*
ATS surveillance service	Term used to indicate a 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 the 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 SSRs.*
Automatic terminal information services (ATIS)	The provision of current, routine information to arriving and departing and departing aircraft by means of continuous and

repetitive broadcasts throughout the day or a specified portion thereof.

B

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.*
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.
Broadcast	A transmission of information relating to air navigation that is not addressed to a specific station or stations. Broadcast by pilots in terms of VHF radio communication shall mean to talk on the appropriate frequency and listen out at all times.

C

Calendar	Discrete temporal reference system that provides the basis for defining temporal position to a resolution of one day. (ISO 191108)
Ceiling and visibility okay (CAVOK)	When the visibility is 10km or more and there is no cloud below 5000 feet (1 500m) or below the highest minimum sector altitude, whichever is the greater and where there has been no weather of significance reported. *Note: Weather of significance is precipitation (drizzle, rain, snow, hail etc), obscurations (fog, mist, smoke, haze, dust etc), thunderstorms and showers.*

Ceiling	The height above the ground or water of the base of the lowest layer of cloud below 20,000 feet covering more than half the sky.
Clearance limit	The point to which an aircraft is granted an Air Traffic Control Clearance.
Change-over point	The point at which an craft navigating on an ATS route segment defend by reference to very high frequency omnidirectional radio ranges is expected to transfer it's primary navigational reference from the facility behind the aircraft to the next facility ahead of the aircraft.
Code (SSR code)	The number assigned to a particular multiple pulse reply signal transmitted by a transponder in Mode A or Mode C.
Common point	A point on the surface of the earth common to the paths of two aircraft used as a basis for the application of separation (e.g. significant points, waypoints, navigation aid, fix)

Control area	A controlled airspace extending upwards from a specified limit above the earth.
Controlled aerodrome	An aerodrome at which air traffic control service is provided to aerodrome traffic. *Note: The term "controlled aerodrome" indicates that air traffic control service is provided to aerodrome traffic but does not necessarily imply that a control zone exists.*
Controlled airspace	An airspace of defined dimensions within which air traffic controlled services are provided in accordance with the airspace classification.

Controlled flight	Any flight that is subject to an air traffic control clearance.
CPDLC message	Information exchanged between an airborne system and its ground counterpart. A CPDLC message consists of a single message element or a combination of message elements conveyed in a single transmission by the initiator.
CPDLC message set	A list of standard message elements and free text message elements
Control zone	A controlled airspace extending upwards from the surface of the earth to a specified upper limit.
Cruise climb	An aeroplane cruising technique resulting in a net increase in altitude as the aeroplane mass decreases.
Cruising level	A level maintained during a significant portion of a flight.
Current flight plan (CPL)	<u>The flight plan that reflects changes to the filed flight plan, if any, by subsequent ATC clearances.</u>
Current data authority	The designated ground system through which a CPDLC dialogue between a pilot and a controller currently responsible for the flight is permitted to take place.

D

Data link communications	A form of communication intended for the exchange of messages via a data link.
Data processing	A systematic sequence of operations performed on data.

Data quality	A degree or level of confidence that the data provided meets the requirements of the data user in terms of accuracy, resolution and integrity.
Day	The period of time from fifteen minutes before sunrise to fifteen minutes after sunset.
Decision altitude (DA)/ height (DH)	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 aid 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.
Declared capacity	A measure of the ability of the ATC system or any of its sub-systems or operating positions to provide service to aircraft during normal activities. It is expressed as the number of aircraft entering a specified portion of airspace in a given of time, taking due account of weather, ATC unit configuration, staff and equipment available, and any other factors which may affect the workload of the controller responsible for the airspace.
Dependent parallel approaches	Simultaneous approaches to parallel or near-parallel instrument runways where radar separation minima between aircraft on adjacent extended runway centre lines are prescribed.
Discrete code	A for-digit SSR Code with the last two digits don being “00”

E

eFPL	The symbol used to designate a filed flight plan exchanged using FF-ICE services.
Elevation	The vertical distance of a point or a level, on or affixed to the surface of earth, measured from mean sea level.
Error	An action or inaction by an operational person that leads to deviations from organisational or operational person intentions or expectations.
Error management	The process of detecting and responding to errors with countermeasures that reduce or eliminate the consequences of errors, and mitigate the probability of further errors or undesired states.
Essential radio navigation service	Means a radio navigation service whose disruption has a significant impact on operations in the affected airspace or aerodrome.
Estimated elapsed time	The estimated time required to proceed from one significant point to another.
Estimated off-block time (EOBT)	The estimated time at which the aircraft will commence movement associated with departure.
Estimated time of arrival (ETA)	For IFR flights, the time at which it is estimated that the aircraft will arrive over that designated point, defined by reference to navigation aids, from which it is intended that an instrument approach procedure will be commenced, or, if no navigation aid is associated with the aerodrome, the time at which the aircraft will arrive over the aerodrome. For VFR flights, the time at which it is estimated that the aircraft will arrive over the aerodrome
Expected approach time (EAT)	The time at which ATC expects that an arriving aircraft, following a delay, will leave the holding point to complete its approach for a

	landing.
	Note: The actual time of leaving the holding point will depend upon the approach clearance.
Emergency Phase	A generic term meaning, as a case maybe, uncertainty, **alert** phase or distress phase

F

Filed flight plan (FPL or eFPL)	The latest flight plan **[as filed with an ATS unit]** submitted by the pilot, an operator or a designated representative**[, without any subsequent changes]** for use by ATS units. **Note**: **[When the word "message" is used as a suffix to this term, it denotes the content and format of the filed flight plan data as transmitted.]** The FPL denotes a filed flight plan exchanged using aeronautical fixed service while eFPL denotes a filed flight plan exchanged using FF-ICE services. The eFPL allows for the exchange of additional information not contained within the FPL.
Flight and flow— information for a collaborative environment (FF-ICE)	Information necessary for planning, coordination, and notification of flights, exchanged in a standardized format between members of the ATM community, including those involved in flight operations and aerodrome operations.
Flight and flow — information for a collaborative environment (FF-ICE) services	A set of services established for the purposes of facilitating the exchange of FF-ICE, accurate assessment of demands, appropriate resource planning, and optimizing flight planning and execution.
Flight and flow — information for a collaborative environment	A unit designated by the appropriate ATS authority for the provision of FF-ICE services.

(FF-ICE) services unit

Note.— The appropriate ATS authority may designate an existing unit, such as an air traffic services unit, or a local or regional air traffic flow management unit as an FF-ICE services unit.

Final approach	That part of the instrument approach procedure which commences at the specified final approach fix or point, or where such a fix or point is not specified: a) At the end of the last procedure turn, base turn or inbound turn of a racetrack procedure, if specified; or b) At the point of interception of the last track in the approach procedure; and ends at a point in the vicinity of an aerodrome from which : i) a landing can be made; or ii) a missed approach procedure is initiated.
Flight information centre	A unit established to provide flight information service and alerting service.
Flight information region	An airspace of defined dimensions within which flight information service and alerting service is provided.
Flight information service	A service provided for the purpose of giving advice and information useful for the safe and efficient conduct of flights.
Flight level	Surfaces of constant atmospheric pressure, which is related to a specific pressure datum 1013.2 Hectopascal (hPa) and is separated from other such 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 the nominal flight path, including deviations from the terms of the air

	traffic control clearances.
Flight plan	Specified information relative to an intended flight or portion of a 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 visibility	The visibility forward from the cockpit of an aircraft in flight.
Flow control	Measures designated to adjust the flow of traffic into a given airspace, along a given route, or abound for a given aerodrome, so as to ensure the most effective utilisation of the airspace.
Forecast	A statement of expected meteorological conditions for a specified time or period, and for a specified area or portion of airspace.
FPL	The symbol used to designate a filed flight plan exchanged via aeronautical fixed service (AFS).
Free text message element.	Part of a message that does not conform to any standardized standard message element in the PANS-ATM (Doc 4444).

G

Glide path	A descent profile defined for vertical guidance during a final approach.
Globally unique flight identifier (GUFI)	An unchangeable data element associated with a flight that allows all eligible members of the ATM community to unambiguously refer to information pertaining to the flight.
Gregorian calendar	A Calendar in general use; first introduced in 1582 to define a year that more closely approximates the typical year than the Julian calendar (ISO 19108) Note.-In the Gregorian calendar, common years have 365 days and leap years 366 days divided into twelve sequential months.
Ground effect	A condition of improved performance (left) 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. *Note: Rotor efficiency is increased by ground effect to a height of about one rotor diameter for most helicopters.*
Ground visibility	The visibility at an aerodrome, as reported by an accredited observer or by automatic systems.

H

Heading	The direction in which the longitudinal axis of an aircraft is pointed, usually expressed in degrees from North (true, magnetic, compass or grid).
Height	The vertical distance of a level, a point or an object considered as a point, measured from a specified datum.

Holding fix	A geochemical location that services as a reference for a holding procedure.
Holding procedure	A pre-determined manoeuvre which keeps an aircraft within a specified airspace while awaiting further clearance.
Hot spot	A location on an aerodrome movement area with a history or potential risk of collision or runway incursion, and where heightened attention by pilots/ drivers is necessary.

Identification	The situation which exists when the position indication of a particular aircraft is seen on a situation display and positively identified.
IFR flight	A flight conducted in accordance with the instrument flight rules.
Incident (Safety Event)	An occurrence, other than an accident, associated with the operation of an aircraft which affects or could affect the safety of operation.
Independent parallel approaches	Simultaneous approaches to parallel or near parallel instrument runways where radar separation minima between aircraft on adjacent extended runway centre lines are not prescribed.
Independent parallel departures	Simultaneous departures from parallel or near-parallel instrument runways.
Initial approach segment	That segment of an instrument approach procedure between the initial approach fix and the intermediate approach fix, or where applicable, the final approach fix or point.
Instrument 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) a ground-based radio navigation aid; or

b) computer-generated navigation data from ground-based, space-based, self-contained navigation aids or a combination of these.

Instrument approach procedures (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 criteria apply. Instrument approach procedures are classified as follows:

Non-precision approach (NPA) procedure	An instrument approach procedure designed for 2D instrument approach operations Type A. Note. — Non-precision approach procedures may be flown using a continuous descent final approach technique (CDFA). CDFA with advisory VNAV guidance calculated by on-board equipment (See PANS-OPS (Doc 8168), Volume I, Part I, Section 4, Chapter 1, paragraph 1.8.1) are considered 3D instrument approach operations. CDFA with manual calculation of the required rate of descent are considered 2D instrument approach operations. For more information on CDFA refer to Section 1.7 and 1.8.
Approach procedure with vertical guidance (APV}	A performance-based navigation (PBN) instrument approach procedure rations Type A.
Precision approach (PA) procedure	An instrument based on navigation systems (ILS, MLS, GLS and SBAS Cat operations Type A or B Note. — Refer to Annex 6 for instrument approach operation types. . . .
Instrument meteorological conditions (IMC)	Meteorological conditions expressed in terms of visibility, distance from could and ceiling, less than the minima specified for visual meteorological conditions.
International NOTAM office	An office designated by a State for the exchange of NOTAM internationally.
Intermediate approach segment	That segment of an instrument approach between either the intermediate approach fix and the final approach fix or point, or between the end of reversal, race track or dead reckoning track procedures and the final approach fix or point, as appropriate.

K

Known traffic	Traffic, the current flight details and intentions of which are known to the controller concerned through direct communication or co-ordination.

L

Landing area	That part of the movement area intended for the landing or take-off of aircraft.
Level	A generic term relating to the vertical position of an aircraft in flight and meaning variously height, altitude or flight level.
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.

Local Flight.	A flight that originates and terminates at the same aerodrome without a full stop landing during any portion of the flight, or that remains within the associated airspace of such an aerodrome, or within the associated General Flying training areas (as per the SA AIP Part 3) of such aerodromes.
Logon address.	A specified code used for data link logon to an ATS unit.

M

Manoeuvring area	That part of an aerodrome to be used for the take-off, landing and taxiing of aircraft, excluding aprons.
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 specified time and location.
Minimum descent altitude/ height	A specified altitude/height in a non-precision approach or circling approach below which descent may not be made without visual reference.
Minimum sector altitude	The lowest altitude which may be used under emergency conditions which will provide a minimum clearance of 1000ft (300m) above all obstacles located in an area contained within a sector of a circle of 25NM (46km) radius centered on a radio aid to navigation.
Minimum Fuel.	The term is used to describe a situation in which an aircraft's fuel supply has reached a state where the flight is committed to land at a specific aerodrome and no additional delay can be accepted. Note, - This state shall mean that the aircraft is still able to attempt the approach and missed approach at the intended destination and if required divert to an alternative destination and land as required

Missed approach procedure	The procedure to be followed if the approach cannot be continued.
Mode (SSR Mode)	The conventional identifier related to specific functions of the interrogational signals transmitted by an SSR interrogator. There are four modes specified in Annex 10: A, B, C, S and intermode.
Movement area	That part of the aerodrome to be used for the take-off, landing and taxiing of aircraft, consisting of the manoeuvring area and the apron(s).
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 signals received.

Time difference of arrival (TDOA)	The difference in relative time that a transponder signal from the same aircraft (or ground vehicle) is received at different receivers.

N

Navigation specification	Means a set of aircraft and flight crew requirements needed to support performance-based navigation operations within a defined airspace
Near-parallel runways	Non-intersecting runways whose extended centre lines have an angle of convergence/divergence of 15 degrees or less.
Next data authority	The ground system so designated by the current data authority through which an onward transfer of communications and control can take place.
Night	Night means the period from fifteen minutes after sunset to fifteen minutes before sunrise
NOTAM	A notice distributed by means of telecommunications 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.

O

Obstacle clearance altitude/ height (OCA/H)	The lowest altitude (OCA), or alternatively, the lowest height above the elevation of the relevant runway threshold, or above the aerodrome elevation, as applicable (OCH), used in establishing compliance with the appropriate obstacle clearance criteria. Note 1. — Obstacle clearance altitude is referenced to mean sea level and obstacle clearance height is referenced to the threshold elevation or in the case of non-precision approach procedures to the aerodrome elevation or the threshold elevation if that is more than 2 m (7 ft) below the aerodrome elevation. An obstacle clearance height for a circling approach procedure is referenced to the aerodrome elevation. Note 2. — For convenience when both expressions are used they may be written in the form "obstacle clearance altitude/height" and abbreviated "OCA/H".
Onward clearance time (OCT)	The time at which it is expected that an aircraft which has been instructed to hold during the en-route phase of flight will be cleared to resume its flight.
Operational control	The exercise of authority over the initiation, continuation, diversion or termination of a flight in the interest of 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 an aircraft operation.

P

Performance-based navigation (PBN)	Means 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 specifications, 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 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 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.

Position indication	The visual indication, in non-symbolic and/ or symbolic form, on a situation display, of the position of an aircraft, aerodrome vehicle or other object.
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.
<u>Preliminary flight plan (PFP)</u>	<u>The information related to a flight submitted by an operator or a designated representative to conduct collaborative planning of a flight, prior to filing a flight plan.</u>
Precision approach radar	Primary radar equipment used to determine the position of an aircraft

(PAR)	during final approach, in terms of lateral and vertical deviations relative to a nominal approach path, and in range relative to touchdown. *Note: Precision approach radars are designated to enable pilots of aircrafts to be given guidance by radio communication during the final stages of the approach to land.*
Pressure altitude	An atmospheric pressure expressed in terms of altitude which corresponds to that pressure in the Standard Atmosphere.

Primary radar	A radar system which uses reflected radio 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 service.
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. *Note 1: Procedure turns are designated "left" or "right" according to the direction of the initial turn.* *Note 2: Procedure turns may be designated as being made either in level flight or while descending, according to the circumstances of each individual procedure.*
Profile	The orthogonal projection of a flight path or portion thereof on the vertical surface containing the nominal track.
PSR blip	The visual indication, in non-symbolic form, on a situation display of the position of an aircraft obtained by primary radar.

R

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 clutter	The visual indication on a situation display of unwanted signals.

Radar contact	The situation which exists when the radar blip or radar position symbol of a particular aircraft is seen and identified on a situation display.
Radar control	Term used to indicate that radar-derived information is employed directly in the provision of air traffic control service.
Radar handover	Transfer of responsibility for the control of an aircraft between two controllers using radar, following identification of the aircraft by both controllers.
Radio navigation service	Means a service providing guidance information or position data for the efficient and safe operation of aircraft supported by one or more radio navigational aids.

	Note: Some applications may require a specific technology e.g. radar, to support the function of flight path monitoring.
Radar separation	The separation used when aircraft position information is derived from radar sources.
Radar vectoring area	A defined area in the vicinity of an aerodrome, in which the minimum safe levels allocated by a radar controller vectoring IFR flights have been pre- determined. *Note: Refer to the SA-AIP ENR 1.6 for the radar terrain charts.*
Radial	A magnetic bearing extending from a VOR/VORTAC/TACAN.
Radiotelephony network	A form of radio communication primarily intended for the exchange of information in the form of speech.
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 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.
Receiving unit/controller	Air Traffic Services unit/air traffic controller to which a message is sent.
Release points	The position, time or level at which arriving aircraft will come under the jurisdiction of approach radar control, in accordance with published procedures
Repetitive flight plan (RPL)	A flight plan related to a series of frequently recurring, regularly operated individual flights with identical basic features, submitted by an operator for retention and repetitive use by ATS units.

Reporting point	A specified geographical location in relation to which the position of an aircraft can be reported.
RNAV specification	Means a navigation specification based on area navigation that does not include the requirement for performance monitoring and alerting, designated by the prefix RNAV, e.g. RNAV 5, RNAV 1. Note. – The performance-based Navigation Manual (Doc 9613), Volume II contains detailed guidance on navigation specifications.
RNP specification	Means a navigation specification based on area navigation that includes the requirements for performance monitoring and alerting, designated by the prefix RNP, e.g. RNP 4, RNP APCH.
Required navigation performance (RNP)	A statement of the navigation performance necessary for operation within a defined airspace.

Runway	A defined rectangular area, on a land aerodrome prepared for the landing and take-off of aircraft.
Runway visual range (RVR)	The range over which the pilot of an aircraft on the centre line of a runway can see the runways surface marking or the lights delineating the runway or identify it's centre line.
Runway-holding position	A designated position intended to protect a runway, an obstacle limitation surface, or an ILS critical/ sensitive area at which taxiing aircraft and vehicle shall stop and hold, unless otherwise authorised by the control tower. *Note: In radiotelephony phraseologies, the expression "holding point" is used to designate the runway-holding position.*
Runway incursion	Any occurrence at an aerodrome involving the incorrect presence of an aircraft, vehicle or person on the protected area of a surface designated for the landing and takeoff of aircraft.

S

Safety management system (SMS)	A systematic approach to managing safety, including the necessary organisational structures, accountabilities, policies and procedures.
Secondary radar	A radar system wherein a radio signal transmitted from the radar station initiates the transmission of a radio signal from another station.
Secondary surveillance radar (SSR)	A surveillance radar system which uses transmitters/ receivers (interrogators) and transponders.
SSR response	The visual indication, in non-symbolic form, on a situation display, of a response from an SSR transponder in reply to an interrogation.
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.

Shore line	A line following the general contour of the shore, except that in cases of inlets or bays, less than 30 nautical miles in width, the line shall pass directly across the inlet or bay to intersect the general contour on the opposite side.
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 that may affect the safety of aircraft operations.
Situation display	An electronic display depicting the position and movement of aircraft and other information as required.
SNOWTAM	A special series NOTAM given in a standard format providing a surface condition report notifying the presence or cessation of hazardous conditions

	due to snow, ice, slush, frost, or standing water or water associated with snow, slush, ice, or frost on the movement area.
Special Air Report	A report that is disseminated by a pilot to ATC whilst at a particular position in flight, and which contains updated information regarding adverse weather conditions or volcanic activity that is, or may affect the aircraft's performance at that time within its proximity.
Special VFR flight	A VFR flight cleared by air traffic control to operate within a control zone under meteorological conditions below the VMC.
Standard instrument arrival (STAR)	A designated instrument flight rule (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 instrument flight rule (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 on-route phase of a flight commences.
Standard message element.	Part of a message defined in the PANS-ATM (Doc 4444) in terms of display format, intended use and attributes.
Surveillance radar	Radar equipment used to determine the position of an aircraft in range and azimuth.

T

Terminal arrival altitude (TAA)	The lowest altitude that will provide a minimum clearance of 300m (1000 feet) above all objects located in an arc of a circle defined by a 46km (25NM) radius centred on the initial approach fix (IAF), or where there is no IAF on the intermediate fix (IF), delimited by straight lines joining the extremity of the arc to the IF. The combined TAAs associated with an approach procedure shall account for an area of 360 degrees around the IF.

Note: The purpose of the TAA is to provide a transition from the en-route structure to an RNAV approach procedure.

Taxiing — Movement of an aircraft on the surface of an aerodrome under its own power, excluding take-off and landing.

Taxiway — 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, including:

a) Aircraft stand taxi lane A portion of an apron designated as a taxiway and intended to provide access to aircraft stands only.

b) Apron taxiway A portion of a taxiway system location an apron and intended to provide a through taxi route across the apron.

	c) <u>Rapid exit taxiway</u> A taxiway connected to a runway at an acute angle and designated to allow landing aeroplanes to turn off at higher speeds than are achieved on other exit taxiways and thereby minimising runway occupancy times.
Terminal control area (TMA)	A control area normally established at the confluence of ATS routes in the vicinity of one or more major aerodromes.
Threat	Events or errors that occur beyond the influence of an operational person, increase operational complexity and which must be managed to maintain the margin of safety.
Threat management	The process of detecting and responding to threats with countermeasures that reduce or eliminate the consequences of threats, and mitigate the probability of errors or undesired states.
Threshold	The beginning of that portion of the runway useable for landing.
Total estimated elapsed time	For IFR flights, the estimated time required from take-off to arrival over that designated point, defined by reference to navigation aids, from which it is intended that an instrument approach procedure will be commenced, or, if no navigation aid is associated with the destination aerodrome, to arrive over the destination aerodrome. For VFR flights, the estimated time required from take-off to arrive over the destination aerodrome.
Touchdown point	The point where the nominal glide path intercepts the runway.
Track	The projection on the earth's surface of the path of an aircraft, direction of which the path at any point is usually expressed in degrees from North (true, magnetic or grid).
Traffic avoidance advice	Advice provided by an Air Traffic Services unit specifying manoeuvres to assist a pilot to avoid a collision.
Traffic information	Information issued by an Air Traffic Services 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.
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 control unit or control position to the next
Transferring unit/controller	Air Traffic control unit/air traffic controller in the process of transferring the responsibility for providing air traffic control service to an aircraft to the next air traffic control unit/air traffic controller along the route of flight.
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 Transition Altitude and Transition Level

Transition level	The lowest flight level available for use above the Transition Altitude.
Transponder	A receiver/transmitter which will generate a reply signal upon proper interrogation (the interrogation and reply being on different frequencies).

U

Unmanned free balloon	A non-power-driven, unmanned lighter-than-air aircraft in free flight.

V

Vectoring	Provision of navigational guidance to aircraft in the form of specific headings, based on the use of an ATS surveillance system.
VFR flight	A flight conducted in accordance with the visual flight rules.
Visibility	Visibility for aeronautical purposes is the greater of :- a) The greatest distance at which a black object of suitable dimensions, situated near the ground, can be seen and recognised when observed against a bright background; b) The greatest distance at which lights in the vicinity of 1000 candelas can be seen and identified against an unlit background.
Visual approach	An approach by an IFR flight when either part or all of an instrument approach procedure is not completed and the approach is executed with visual reference to terrain.
Visual meteorological conditions (VMC)	Meteorological conditions expressed in terms of visibility, horizontal and vertical distance from cloud ceiling, equal to or better than the specified minima.

W

Way-point	A specified geographical location used to define an area navigation route or the flight path of an aircraft employing area navigation, either:

a) Fly-by waypoint – A way point which requires turn anticipation to allow tangential interception of the next segment from a route or procedure, or

b) Flyover way point - A way point which a turn is initiated in order to joint the next segment of a route or procedure.

Chapter 2 **Abbreviations**

A

ACC	-	Area control centre.	ACAS	-	Airborne collision avoidance system.
ADR	-	Advisory route.	ADS	-	Automatic dependent surveillance.
AFIS	-	Aeronautical flight information service.	AFISU*	-	AFIS Unit.
AFS	-	Aeronautical Fixed Service.	AFTN	-	Aeronautical fixed telecommunications network.
agl	-	Above ground level.	A/G	-	Air-to-ground.
AIS	-	Aeronautical information service.	amsl	-	Above mean sea level.
AP	-	Airport.	APP	-	Approach control centre.
ATA	-	Actual time of arrival.	ASDA	-	Accelerated stopping distance available.
ATC	-	Air traffic control.	ATCU	-	Air traffic control unit.
ATD	-	Actual time of departure.	ATFM	-	Air traffic flow management.
ATIS	-	Automatic terminal information service.	ATS	-	Air Traffic Services.
ATM	-	Aerodrome traffic monitor	ATSU	-	Air traffic service unit.
ATZ	-	Aerodrome Traffic Zone.	AWY	-	Airway.

C

CAA	-	Civil Aviation Authority.	CAR*	-	Civil Aviation Regulations
CATS*	-	Civil Aviation Technical Standards	c/s	-	Callsign

CPDLC	-	Controller Pilot Data Link Communications	CTA	-	Control Area
CTR	-	Control Zone			

D

DA/H	-	Decision Altitude / Height	DEP	-	Depart, Departure or Departed
D/F	-	Direction finding	DLA	-	Delay or Delayed
DME	-	Distance measuring equipment			

E

EAT	-	Expected Approach Time.	ETA	-	Estimated Time of Arrival
ETD	-	Estimated Time of Departure			

F

FAF	-	Final Approach Fix	FAP	-	Final Approach Point
FIR	-	Flight Information Region	FL	-	Flight Level
FPL	-	Flight Plan	ft	-	Feet

G

GP	-	Glide Path	GMC	-	Ground Movement Control

H

HF	-	High Frequency	HPa	-	Hectopascal s

I

IAF	-	Initial Approach Fix	IF	-	Intermediate Approach Fix
IFR	-	Instrument Flight Rules	ILS	-	Instrument Landing System
IMC	-	Instrument MET Conditions			

K

km	-	Kilometre(s)	kts	-	Knots

L

LAT	Latitude	LDA	Landing Distance Available
LLZ	Localizer	LONG	Longitude
LVO	Low Visibility Operations	LVP	Low Visibility Procedure (South Africa)

M

MAPt	Missed Approach Point	MDA/H	Minimum Descent Altitude / Height
MET	Meteorological	MHz	Megahertz
MSA	Minimum Sector Altitude	MSL	Mean Sea Level

N

NDB	Non-Directional Radio Beacon	NM	Nautical Mile

O

OCA/H	Obstacle Clearance Altitude/ Height	OCT	Onward Clearance Time
OHD	Overhead	OUBD	Outbound

P

PAPI	Precision Approach Path Indicator	PIB	Preflight Information Bulletin

Q

QDM	-	Magnetic heading.	QDR	-	Magnetic bearing.
QFE	-	Atmospheric pressure at airfield elevation (on runway threshold).	QNH	-	Altimeter subscale setting to obtain elevation when on the ground.

R

RCF	Radio Communication Failure.	RPL	Repetitive Flight Plan.
RT*	Radiotelephony.	RTF	Radiotelephone.
RVR	Runway Visual Range.		

S

SAR	Search and Rescue	SID	Standard Instrument Departure
SMR	Surface Movement Radar	SRA	Surveillance Radar Approach
SSR	Secondary Surveillance Radar	STAR	Standard Instrument Arrival

T

THR	Threshold.	TMA	Terminal Control Area.
TODA	Take-off Distance Available.	TORA	Take-off Run Available.
TWR	Aerodrome Control Tower.		

U

UHF	Ultra High Frequency	u/s	Unserviceable
UTC	Universal Time Constant (Co-ordinated Universal Time Constant)		

V

VDF	VHF Direction Finding	VFR	Visual Flight Rules
VHF	Very High Frequency	VMC	Visual MET Conditions
VOR	VHF Omni-Range	VORTAC	VOR/ tactical air navigation

W

WEF	With Effect From	WDI	Wind Direction Indicator
WIE	With Immediate Effect	WIP	Work in Progress
Wx	Weather		

Z

Z	In Time Groups Indicates UTC (Zulu)

Chapter 3 Conversion Tables

3.1 Units of Measurement

The units of measurements to be used by controllers in communication with aircraft are listed in the table below:-

Measurement of	Units used
Distances used in navigation, generally in excess of 2 or 3 nautical miles.	Nautical miles, spoken as "miles"
Relatively short distance such as those relating to an aerodrome. (e.g. runway lengths, distances of obstructions from runway or of facilities from aerodrome).	Meters
Radar-position reporting and ranges from touch down.	Nautical miles and/or fractions thereof, spoken as "miles".
Altitudes, elevations and height.	Feet
Depths of standing water, snow and slush.	Millimetres
Horizontal speed including wind speed.	Knots
Vertical speed.	Feet per minute
Wind direction for landing and taking off.	Degrees magnetic
Visibility	Kilometres or meters
Runway Visual Range	Meters
Altimeter setting	Hectopascals
Temperature	Degrees Celsius
Weight	Metric tons or kilograms
Time	Hours and minutes, the day of 24 hours beginning at midnight

UTC

3.2a **Table for Converting Hectopascals to Inches of Mercury**

975.0 - 999.9 HPa

Tenths HPa	.0	.1	.2	.3	.4	.5	.6	.7	.8	.9
HPa	**Inches Hg**									
975	28.79	28.79	28.79	28.80	28.80	28.80	28.80	28.81	28.81	28.81
976	28.82	28.82	28.82	28.83	28.83	28.83	28.83	28.84	28.84	28.84
977	28.85	28.85	28.85	28.85	28.86	28.86	28.86	28.87	28.87	28.87
978	28.88	28.88	28.88	28.88	28.89	28.89	28.89	28.90	28.90	28.90
979	28.90	28.91	28.91	28.91	28.92	28.92	28.92	28.93	28.93	28.93
980	28.93	28.94	28.94	28.94	28.95	28.95	28.95	28.96	28.96	28.96
981	28.96	28.97	28.97	28.97	28.98	28.98	28.98	28.98	28.99	28.99
982	28.99	29.00	29.00	29.00	29.01	29.01	29.01	29.01	29.02	29.02
983	29.02	29.03	29.03	29.03	29.03	29.04	29.04	29.04	29.05	29.05
984	29.05	29.06	29.06	29.06	29.06	29.07	29.07	29.07	29.08	29.08
985	29.08	29.09	29.09	29.09	29.09	29.10	29.10	29.10	29.11	29.11
986	29.11	29.11	29.12	29.12	29.12	29.13	29.13	29.13	29.14	29.14
987	29.14	29.14	29.15	29.15	29.15	29.16	29.16	29.16	29.16	29.17
988	29.17	29.17	29.18	29.18	29.18	29.19	29.19	29.19	29.19	29.20
989	29.20	29.20	29.21	29.21	29.21	29.21	29.22	29.22	29.22	29.23
990	29.23	29.23	29.24	29.24	29.24	29.24	29.25	29.25	29.25	29.26
991	29.26	29.26	29.27	29.27	29.27	29.27	29.28	29.28	29.28	29.29
992	29.29	29.29	29.29	29.30	29.30	29.30	29.31	29.31	29.31	29.32
993	29.32	29.32	29.32	29.33	29.33	29.33	29.34	29.34	29.34	29.34
994	29.35	29.35	29.35	29.36	29.36	29.36	29.37	29.37	29.37	29.37
995	29.38	29.38	29.38	29.39	29.39	29.39	29.40	29.40	29.40	29.40
996	29.41	29.41	29.41	29.42	29.42	29.42	29.42	29.43	29.43	29.43
997	29.44	29.44	29.44	29.45	29.45	29.45	29.45	29.46	29.46	29.46
998	29.47	29.47	29.47	29.47	29.48	29.48	29.48	29.49	29.49	29.49

999	29.50	29.50	29.50	29.50	29.51	29.51	29.51	29.52	29.52	29.52

3.2b **Table for Converting Hectopascals to Inches of Mercury 1000.0 - 1024.9 HPa**

Tenths HPa	.0	.1	.2	.3	.4	.5	.6	.7	.8	.9
HPa	**Inches Hg**									
1000	29.53	29.53	29.53	29.53	29.54	29.54	29.54	29.55	29.55	29.55
1001	29.55	29.56	29.56	29.56	29.57	29.57	29.57	29.58	29.58	29.58
1002	29.58	29.59	29.59	29.59	29.60	29.60	29.60	29.60	29.61	29.61
1003	29.61	29.62	29.62	29.62	29.63	29.63	29.63	29.63	29.64	29.64
1004	29.64	29.65	29.65	29.65	29.65	29.66	29.66	29.66	29.67	29.67
1005	29.67	29.68	29.68	29.68	29.68	29.69	29.69	29.69	29.70	29.70
1006	29.70	29.71	29.71	29.71	29.71	29.72	29.72	29.72	29.73	29.73
1007	29.73	29.73	29.74	29.74	29.74	29.75	29.75	29.75	29.76	29.76
1008	29.76	29.76	29.77	29.77	29.77	29.78	29.78	29.78	29.78	29.79
1009	29.79	29.79	29.80	29.80	29.80	29.81	29.81	29.81	29.81	29.82
1010	29.82	29.82	29.83	29.83	29.83	29.84	29.84	29.84	29.84	29.85
1011	29.85	29.85	29.86	29.86	29.86	29.86	29.87	29.87	29.87	29.88
1012	29.88	29.88	29.89	29.89	29.89	29.89	29.90	29.90	29.90	29.91
1013	29.91	29.91	29.91	29.92	29.92	29.92	29.93	29.93	29.93	29.94
1014	29.94	29.94	29.94	29.95	29.95	29.95	29.96	29.96	29.96	29.96
1015	29.97	29.97	29.97	29.98	29.98	29.98	29.99	29.99	29.99	29.99
1016	30.00	30.00	30.00	30.01	30.01	30.01	30.02	30.02	30.02	30.02
1017	30.03	30.03	30.03	30.04	30.04	30.04	30.04	30.05	30.05	30.05
1018	30.06	30.06	30.06	30.07	30.07	30.07	30.07	30.08	30.08	30.08
1019	30.09	30.09	30.09	30.09	30.10	30.10	30.10	30.11	30.11	30.11
1020	30.12	30.12	30.12	30.12	30.13	30.13	30.13	30.14	30.14	30.14
1021	30.15	30.15	30.15	30.15	30.16	30.16	30.16	30.17	30.17	30.17
1022	30.17	30.18	30.18	30.18	30.19	30.19	30.19	30.20	30.20	30.20
1023	30.20	30.21	30.21	30.21	30.22	30.22	30.22	30.22	30.23	30.23

1024	30.23	30.24	30.24	30.24	30.25	30.25	30.25	30.25	30.26	30.26

3.2 C **Table for Converting Hectopascals to Inches of Mercury 1025.0 - 1049.9 HPa**

Tenths HPa	.0	.1	.2	.3	.4	.5	.6	.7	.8	.9
HPa	**Inches Hg**									
1025	30.26	30.27	30.27	30.27	30.28	30.28	30.28	30.28	30.29	30.29
1026	30.29	30.30	30.30	30.30	30.30	30.31	30.31	30.31	30.32	30.32
1027	30.32	30.33	30.33	30.33	30.33	30.34	30.34	30.34	30.35	30.35
1028	30.35	30.35	30.36	30.36	30.36	30.37	30.37	30.37	30.38	30.38
1029	30.38	30.38	30.39	30.39	30.39	30.40	30.40	30.40	30.40	30.41
1030	30.41	30.41	30.42	30.42	30.42	30.43	30.43	30.43	30.43	30.44
1031	30.44	30.44	30.45	30.45	30.45	30.46	30.46	30.46	30.46	30.47
1032	30.47	30.47	30.48	30.48	30.48	30.48	30.49	30.49	30.49	30.50
1033	30.50	30.50	30.51	30.51	30.51	30.51	30.52	30.52	30.52	30.53
1034	30.53	30.53	30.53	30.54	30.54	30.54	30.55	30.55	30.55	30.56
1035	30.56	30.56	30.56	30.57	30.57	30.57	30.58	30.58	30.58	30.59
1036	30.59	30.59	30.59	30.60	30.60	30.60	30.61	30.61	30.61	30.61
1037	30.62	30.62	30.62	30.63	30.63	30.63	30.64	30.64	30.64	30.64
1038	30.65	30.65	30.65	30.66	30.66	30.66	30.66	30.67	30.67	30.67
1039	30.68	30.68	30.68	30.69	30.69	30.69	30.69	30.70	30.70	30.70
1040	30.71	30.71	30.71	30.72	30.72	30.72	30.72	30.73	30.73	30.73
1041	30.74	30.74	30.74	30.74	30.75	30.75	30.75	30.76	30.76	30.76
1042	30.77	30.77	30.77	30.77	30.78	30.78	30.78	30.79	30.79	30.79
1043	30.79	30.80	30.80	30.80	30.81	30.81	30.81	30.82	30.82	30.82
1044	30.82	30.83	30.83	30.83	30.84	30.84	30.84	30.84	30.85	30.85
1045	30.85	30.86	30.86	30.86	30.87	30.87	30.87	30.87	30.88	30.88
1046	30.88	30.89	30.89	30.89	30.90	30.90	30.90	30.90	30.91	30.91
1047	30.91	30.92	30.92	30.92	30.92	30.93	30.93	30.93	30.94	30.94
1048	30.94	30.95	30.95	30.95	30.95	30.96	30.96	30.96	30.97	30.97
1049	30.97	30.97	30.98	30.98	30.98	30.99	30.99	30.99	31.00	31.00

3.3 **Conversion Tables**

Tables for converting values from one unit to another appear below.

Meters/ Feet/Meters		
Meters	**Feet/ Meters**	**Feet**
0.305	1	3.281
0.61	2	6.562
0.914	3	9.842
1.219	4	13.123
1.524	5	16.404
1.829	6	19.685
2.134	7	22.966
2.438	8	26.247
2.743	9	29.528
3.048	10	32.809
6.096	20	65.617
9.144	30	98.426
12.192	40	131.234
15.24	50	164.043
18.29	60	196.852
21.34	70	229.66
24.38	80	262.469
27.43	90	295.278
30.48	100	328.087
60.96	200	656.1
91.44	300	984.3
121.92	400	1,312.3
152.4	500	1,640.4
304.8	1,000	3,280.9
609.6	2,000	6,561.7

Lb/ Kg/ Lb		
Kg	**Lb/ Kg**	**Lb**
0.454	1	2.205
0.907	2	4.409
1.361	3	6.614
1.814	4	8.818
2.268	5	11.023
2.722	6	13.228
3.175	7	15.432
3.629	8	17.637
4.082	9	19.842
4.536	10	22.046
9.072	20	44.092
13.608	30	66.139
18.144	40	88.185
22.680	50	110.231
1 000kg = 1 metric ton		

Nautical Miles/ Kilometers/ Statute Miles		
NM	**Km**	**SM**
0.54	1	0.62
1.08	2	1.24
1.62	3	1.86
2.16	4	2.49
2.70	5	3.11
3.24	6	3.73
3.78	7	4.35

914.4	3,000	9,842.6
1,219.2	4,000	13,123.5
1,524.0	5,000	16,404.3

4.32	8	4.99
4.86	9	5.59
5.40	10	6.21

Nautical Miles/ Statute Miles/ Kilometers		
NM	**SM**	**Km**
0.87	1	1.61
1.74	2	3.22
2.61	3	4.83
3.47	4	6.44
4.34	5	8.05
5.21	6	9.66
6.08	7	11.27
6.95	8	12.88
7.82	9	14.49
8.68	10	16.09

Statute Miles/ Nautical Miles/ Kilometers		
SM	**NM**	**Km**
1.15	1	1.85
2.30	2	3.70
3.45	3	5.56
4.61	4	7.41
5.76	5	9.26
6.91	6	11.11
8.06	7	12.96
9.21	8	14.82
10.36	9	16.67
11.52	10	18.52

Chapter 4 Cross-Wind Component Table

4.1 Cross-wind component

The angle between the runway and the crosswind is listed in the "Angle between Wind & Runway" column on the left of the table. The wind speed is indicated in the top row of the table. To determine the crosswind component find the value on the table at the intersection of the row (horizontal) containing the angle between wind and runway and column (vertical) containing the wind speed.

Example: Runway 24; Surface wind 170˚/25 Kts. The angle between the runway and the wind is 70 degrees. The crosswind component is 24.

Angle between wind & runway	Wind Speed in Knots										
	10	15	20	25	30	35	40	45	50	55	60
10	2	3	3	4	5	6	7	8	9	9	10
20	3	5	7	9	10	12	14	16	17	19	20
30	5	8	10	13	15	18	20	23	25	28	30
40	6	10	13	16	19	23	26	29	32	36	39
50	8	12	15	19	23	27	31	35	38	42	46
60	9	13	17	22	26	31	35	39	43	48	52
70	9	14	19	24	28	33	37	42	47	52	56
80	10	15	20	25	30	35	39	44	49	54	59
90	10	15	20	25	30	35	40	45	50	55	60

Note: *Under gusty conditions the cross-wind component for the average wind speed and the cross-wind component for the strongest gusts must be calculated and passed to the aircraft.*

Example: *Wind is 40 degrees off runway heading with an average wind speed of 15 knots gusting 35 knots.*

Aircraft will be informed that the average cross-wind component calculates at 10 knots gusting 23 knots.

Angle between wind & runway	Wind Speed in Knots													
	5	10	15	20	25	30	35	40	45	50	55	60	65	70
10	-5	-10	-15	-20	-25	-29	-34	-39	-44	-49	-54	-59	-64	-69
20	-5	-9	-14	-19	-23	-28	-33	-38	-42	-47	-52	-56	-61	-66
30	-4	-9	-13	-17	-22	-26	-30	-35	-39	-43	-48	-52	-56	-61
40	-4	-8	-11	-15	-19	-23	-27	-31	-34	-38	-42	-46	-50	-54
50	-3	-8	-10	-13	-15	-19	-22	-26	-29	-32	-35	-39	-42	-45
60	-3	-5	-8	-10	-13	-15	-18	-20	-23	-25	-28	-30	-33	-35
70	-2	-3	-5	-7	-9	-10	-12	-14	-15	-17	-19	-21	-22	-24
80	-1	-2	-3	-3	-4	-5	-6	-7	-8	-9	-9	-10	-11	-12
90	0	0	0	0	0	0	0	0	0	0	0	0	0	0
100	+1	+2	+3	+3	+4	+5	+6	+7	+8	+9	+9	+10	+11	+12
110	+2	+3	+5	+7	+9	+10	+12	+14	+15	+17	+19	+21	+22	+24
120	+3	+5	+8	+10	+13	+15	+18	+20	+23	+25	+28	+30	+33	+35
130	+3	+8	+10	+13	+15	+19	+22	+26	+29	+32	+35	+39	+42	+45
140	+4	+8	+11	+15	+19	+23	+27	+31	+34	+38	+42	+46	+50	+54
150	+4	+9	+13	+17	+22	+26	+30	+35	+39	+43	+48	+52	+56	+61
160	+5	+9	+14	+19	+23	+28	+33	+38	+42	+47	+52	+56	+61	+66
170	+5	+10	+15	+20	+25	+29	+34	+39	+44	+49	+54	+59	+64	+69

Section 2 Air Traffic Services

Chapter 1 Air Traffic Services

1 Introduction

1.1 Air traffic services within the Republic of South Africa are provided in accordance with the Civil Aviation Regulations and Technical Standards. Generally, these are in line with the standards and recommended practices of the International Civil Aviation Organisation.

1.2 The Civil Aviation Technical Standards - Air Traffic Services - Standards and Procedures, contains standards and procedures to civilian controllers providing air traffic services.

2 Air Traffic Services

2.1 Air traffic service is a generic term meaning variously:

a) Air traffic control service

b) Air traffic advisory service

c) Flight information service

d) Alerting service.

3 Objectives of Air Traffic Services

3.1 The objectives of Air Traffic Services are to:

a) Prevent collisions between aircraft;

b) Prevent collisions between aircraft moving on the maneuvering area and between aircraft and obstructions on the maneuvering area;

c) Expedite and maintain a safe and orderly flow of air traffic;

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

e) Notify appropriate organisations regarding aircraft in need of SAR and to assist such organisations as required.

Note The objectives of air traffic services as prescribed above do not include prevention of collision between aircraft in flight and terrain or obstacles thereon, so that the procedures prescribed do not relieve the pilot from the responsibilities for ensuring that any instructions or clearances issued by air traffic services are safe in this respect. When an IFR flight is vectored by any means of ATS surveillance, air traffic control is responsible for ensuring adequate terrain clearance.

3.2 Divisions of the air traffic services

The air traffic services shall comprise three services identified as follows:

3.2.1 An air traffic control service is provided according to the particular circumstances and class of airspace. It may comprise one or more of the following:

a) Aerodrome control service, the provision of air traffic control service for aerodrome traffic, in order to accomplish objectives a), b) and c), of 3.1

b) Approach control service, with or without the aid of radar; 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 3.1

c) Area control service, with or without the aid of radar, the provision of air traffic control service for controlled flights, in order to accomplish objectives a) and c), of 3.1

3.2.2 The *flight information service*, to accomplish objective d) of 3.1.

3.2.3 The *alerting service,* to accomplish objective e) of 3.1

3.3 **Safety and Expedition**

3.3.1 The provision of an air traffic control or advisory service should be based upon expedition consistent with safety. In complex environments the benefits of deviating from basic procedures in order to expedite traffic should be carefully considered against the extent of co-ordination required and the attendant risk of error. The controller should deviate from the basic procedures only when he is quite sure that the resultant co-ordination can be carried out without excessive workload and without detriment to the safety of traffic under his control.

3.3.2 Where controllers are working together they should, whenever possible, pay attention to each other's actions in order to provide an additional safeguard against errors or omissions.

4 Airspace Organisation and Management

4.1 All airspace within the borders of the Republic is the concern of ATM and is a useable resource. The ATM service provider, in conjunction with the SANDF is responsible for the flexible allocation and the usage of airspace based on the principles of access and equity. The airspace is organised and managed in a manner that will accommodate all current and potential new uses of airspace.

4.2 Airspace organisation and management will provide the first layer of conflict management. Effective airspace organisation and management will enhance the ability of the ATM service provider and airspace users to accomplish conflict management and also increase ATM system safety, capacity and efficiency.

4.3 The airspace is organised to facilitate handling of flights and the ability for flights to be conducted along optimum flight trajectories from gate to gate without undue restriction or delay.

5 Combining Functions of an ATSU

5.1 An ATSU may undertake one or more of the following ATS functions.

5.1.1 Approach Control may be combined with Aerodrome Control, in which case the combined service will be identified by the call-sign of the TWR, i.e. ...(Name of aerodrome)...Tower.

5.1.2 Air Traffic Advisory Service or Flight Information Service may be combined with Area Control, in which case the combined service will be identified by the call-sign of the Area Control, i.e. name of city or sector.

6. Identification of air traffic services units and airspaces

6.1 An area control centre or flight information centre shall be identified by the name of a nearby town or city or geographic feature.

6.2 An aerodrome control tower or approach control unit shall be identified by the name of the aerodrome at which it is located.

6.3 A control zone, control area or flight information region shall be identified by the name of the unit having jurisdiction over such airspace.

(c) the insertion in Section 2 for Chapter 1 after paragraph 6 of the following paragraph:

<u>7. Establishment of change-over points</u>

<u>7.1 Air Navigation Service Providers (ANSPs) shall establish change-over points on:</u>

<u>(a) ATS route segments defined by reference to VOR where this will assist accurate navigation along the route segments.</u>

<u>(b) The establishment of change-over points should be limited to route segments of 110 km (60 NM) or more, except where the complexity of ATS routes, the density of navigation aids or other technical and operational reasons warrant the establishment of change-over points on shorter route segments.</u>

7.2 Unless otherwise established in relation to the performance of the navigation aids or frequency protection criteria, the change-over point on a route segment should be the mid-point between the facilities in the case of a straight route segment or the intersection of radials in the case of a route segment which changes direction between the facilities.

Section 2 Air Traffic Services

Chapter 2 Division of Airspace

1 General

1.1 In order to facilitate the provision of air traffic services, the airspace is divided as detailed in the following paragraphs.

1.2 Particulars of the various airspaces implemented within the RSA can be obtained from the SA-AIP.

2 Flight Information Regions

2.1 Flight information regions are airspaces of defined dimensions within which flight information service and alerting services are provided.

2.2 The RSA airspace is divided into three flight information regions (FIR). These being the Johannesburg FIR, Cape Town FIR and Oceanic FIR.

2.3 ICAO Regional Meetings determine the boundaries of the FIRs in order to allocate responsibility for the provision of the ATS to specified States.

2.4 States are expected to divide the airspaces within their FIRs into the following types of airspace as necessary for the efficient provision of the ATS to the expected air traffic;

a) Controlled Airspaces;

b) Advisory Airspaces; and

c) Information Airspaces.

2.5 **Classification of Airspaces**

2.5.1 The classification of the airspace within a flight information region determines the flight rules which apply and the minimum services which are to be provided.

Note: *Refer to SA-CATS 172.02.2 for the classification of airspaces.*

2.6 **Controlled Airspace**

2.6.1 Aircraft operating in these airspaces are provided with full air traffic control service in accordance with airspace classification. Controlled airspace is sub-divided into the following types:

Airspace Type	Airspace Classification	Exceptions
a) Aerodrome Traffic Zone	B, C, D or E	
b) Control Zone	B, C, D or E	
c) Control Area	B, C, D or E	No VFR flights permitted above FL195.
d) Terminal Control Area	B or C	
e) ATS route	B, C, D or E	No VFR flights permitted above FL195.
f) Oceanic	A	IFR only above FL245.

2.7 **Uncontrolled Airspace**

2.7.1 **Advisory Airspace**

2.7.1.1 In advisory airspace all participating IFR flights receive an air traffic advisory service and *all* flights receive flight information service if requested.

2.7.2 **Information Airspace**

2.7.2.1 Air Traffic Control Service is not provided in uncontrolled airspace, only information useful to the safe and efficient conduct of flights is provided.

2.8 **Designated Uncontrolled Airspaces**

2.8.1 **Aerodrome Traffic Zone Class G**

This includes the provision of Aerodrome Flight Information Service.

2.8.2 **Flying Training Areas**

These designated flying areas are indicated as danger areas on aeronautical charts and are described in the SA-AIP.

2.8.3 **Prohibited, Restricted or Danger Areas**

These are indicated on aeronautical charts and may intrude into or be encircled by Controlled or Advisory Airspace.

2.8.4 **Information Routes**

These are frequently flown routes through uncontrolled airspace and are shown on charts by a single line with the appropriate code letter of the route number and the letter “F” e.g. W86F.

Section 2 Air Traffic Services

Chapter 3 ATS System Capacity and Air Traffic Flow Management

1 Capacity Management

1.1 General

1.1.1 The capacity of an ATS system depends on many factors, including the ATS route structure, the navigation accuracy of the aircraft using the airspace, weather related factors and controller workload. Every effort should be made to provide sufficient capacity to cater for both normal and peak traffic levels; however, in implementing any measures to increase capacity the responsible ATM service provider shall ensure that the processes as contained in the Safety Management System are complied with and that safety levels are not compromised in any way.

1.1.2 The number of aircraft provided with an ATC service shall not exceed that which can be safely handled by the ATSU concerned under the prevailing circumstances. In order to define the maximum number of flights which can be safely accommodated, the responsible ATM service provider shall assess and declare the ATC capacity for control areas, for control sectors within a control area, for approach sectors within a terminal manoevering area and for aerodromes.

1.1.3 ATC capacity should be expressed as the maximum number of aircraft which can be accepted over a given period of time within the airspace or at the aerodrome concerned.

Note: *The most appropriate measure of capacity is likely to be the sustainable hourly traffic flow. Such hourly capacities can, for example, be converted into daily, monthly or annual values.*

1.2 Capacity Assessment

1.2.1 In assessing capacity values, factors to be taken into account should include the following:

a) The level and type of ATS provided;

b) The structural complexity of the control area, terminal manoevering area and associated sectors or the aerodrome concerned;

c) Controller workload, including control and coordination tasks to be performed;

d) The types of communications, navigation and surveillance systems in use, their degree of technical reliability and availability as well as the availability of back-up systems and/ or procedures;

e) Availability of ATC systems providing controller support and alert functions; and

f) Any other factor or element deemed relevant to controller workload.

Note: *Summaries of techniques which may be used to estimate control sector/ position capacities are contained in the "Air Traffic Services Planning Manual" (Doc 9426).*

1.3 Regulation of ATS Capacity and Traffic Volumes

1.3.1 Where traffic demand varies significantly on a daily or periodic basis, facilities and procedures should be implemented to vary the number of operational sectors or working positions to meet the

prevailing and anticipated demand. Applicable capacities and procedures shall be contained in the ATSU SSI Manual.

1.3.2 In case of particular events which have a negative impact on the declared capacity of an airspace or aerodrome, the capacity of the airspace or aerodrome concerned shall be reduced accordingly for the required time period. Whenever possible, the capacity pertaining to such events should be predetermined.

1.3.3 To ensure that safety is not compromised whenever traffic demand in an airspace or at an aerodrome is forecast to exceed the available ATS capacity, measures shall be implemented to regulate traffic volumes accordingly.

1.4 **Enhancement of ATS Capacity**

1.4.1 The responsible ATM service provider should:

a) Periodically review ATS capacities in relation to traffic demand; and

b) Provide for flexible use of airspace in order to improve the efficiency of operations and increase capacity.

(d) the substitution in Section 2 for Chapter 3 paragraph 1.4.2 of the following paragraph:

1.4.2 In the event that traffic demand regularly exceeds ATC capacity, resulting in continuing and frequent traffic delays, or it becomes apparent that forecast traffic demand will exceed capacity values, the appropriate ATS authority should, as far as practicable:

(a) implement steps aimed at maximizing the use of the existing system capacity; **[and]**

(b) develop plans to increase capacity to meet the actual or forecast demand; and

(c) arrange for the FF-ICE planning service to be provided for more accurate and earlier demand assessment and for collaborative flight planning.

Note: Procedures and messages for the FF-ICE planning service are contained in Section 12 of this manual.

1.5 **Flexible Use of Airspace**

1.5.1 The Central Airspace Management Unit (CAMU) through the establishment of agreements and procedures make provision for the flexible use of all airspace in order to increase airspace capacity and to improve the efficiency and flexibility of aircraft operations.

1.5.2 Agreements and procedures providing for a flexible use of airspace should specify the following:

a) The horizontal and vertical limits of the airspace concerned;

b) The classification of any airspace made available for use by civil air traffic;

c) Units or authorities responsible for transfer of the airspace;

d) Conditions of transfer of the airspace to the ATC unit concerned;

e) Conditions for transfer of the airspace from the ATC unit concerned;

f) Periods of availability of the airspace;

g) Any limitations on the use of airspace concerned; and

h) Any other relevant procedures or information.

2 Air Traffic Flow Management

2.1 General

2.1.1 An air traffic flow management (ATFM) service shall be implemented for airspace where traffic demand at times exceeds the defined ATS capacity.

2.1.2 ATFM should be implemented on the basis of a multilateral agreement where collaborative decision making takes place.

2.1.3 Certain flights may be exempt from ATFM or be given priority over other flights

2.2 Flow Management procedures

2.2.1 ATFM should be conducted in three phases, these being:

a) *Strategic planning* – This stage will begin as soon as practicable when actions are carried out more than one day before the day on which it will take place. Strategic planning is normally carried out well in advance i.e. two to six months ahead. At the strategic stage, demand and capacity balancing will respond to the fluctuations in schedules and demands, including the increasing globalization of traffic patterns, as well as the seasonal changes of weather and major weather phenomena. Through collaborative decision- making, assets will be optimised to maximize throughput, thus providing a basis for predictable scheduling;

b) *Pre-tactical planning* - This stage is the action to be taken on the day before the day on which the plan will take effect. At the pre-tactical stage, demand and capacity balancing will evaluate the current allocation of ATM service provider, airspace user and aerodrome operator assets and resources against the projected demands. Through collaborative decision making, when possible, adjustments will be made to assets, resource allocations, projected trajectories, airspace organization and allocation of entry/exit times for aerodromes and airspace volumes to mitigate any imbalance;

c) *Tactical operations* – This is the stage where the implementation of the measures planned during the previous two stages occurs. Demand and capacity balancing will focus more closely on demand management to adjust imbalances. It will consider weather conditions, infrastructure status, resource allocations, and disruptions in schedules that would cause an imbalance to arise. Through collaborative decision making, these actions will include dynamic adjustments to the organisation of airspace to balance capacity; dynamic changes to the entry/exit times for aerodromes and airspace volumes; and adjustments to the schedules by users.

Section 2 Air Traffic Services

Chapter 4 Military Operations

1 Responsibility In Regard To Military Traffic

1.1 It is recognised that some military aeronautical operations necessitate non-compliance with certain air traffic procedures. In order to ensure the safety of flight operations the SANDF shall be asked, whenever practicable, to notify the proper air traffic control unit prior to undertaking such manoeuvres.

1.2 A reduction of separation minima required by military necessity or other extraordinary circumstances shall only be accepted by an air traffic control unit when a specific request in some recorded form has been obtained from the authority having jurisdiction over the aircraft concerned and the lower minima then to be observed shall apply only between those aircraft. Some recorded form of instruction fully covering this reduction of separation minima must be issued by the air traffic control unit concerned.

1.3 Temporary airspace reservation, either stationary or mobile, may be established for the use of large formation flights or other military air operations. Arrangements for the reservation of such airspace shall be accomplished by coordination between the user and the ATM service provider, in this case the CAMU.

2 Responsibility in Respect of Military Aircraft in Controlled Airspace's

2.1 Military aircraft operating in controlled airspaces at civil aerodromes shall comply with civil air traffic control procedures and ATSUs shall provide them with normal air traffic services and facilities.

2.2 Military aircraft operating in the FIR outside of controlled airspaces and outside of designated military flying areas will normally comply with civil air traffic procedures.

2.3 When deemed necessary by the appropriate military authority, military aircraft may operate in such areas without complying with normal air traffic procedures.

2.4 ATSUs will provide all known military aircraft operating in the FIR with normal air traffic services and facilities.

3 **Formation Flights**

3.1 Flights of military aircraft operating as a formation on the same flight plan, and flying or intending to fly in IMC, may request ATC clearance for flights within controlled airspaces. In order to avoid undue delay to military or civil traffic, clearance may be granted for such flights provided the aircraft of such formations can maintain separation from each other visually, and are able to communicate with the formation leader.

3.2 The identification of the leader of the formation must be shown on the flight plan, together with the number of aircraft in the flight, and all ATC communications and clearances should be addressed to the leader.

3.3 If the weather conditions encountered are such that the aircraft of the formation are unable to maintain separation visually, the leader will inform ATC. On receipt of such a message ATC will:-

a) If practicable, take action to obtain normal separation standards between all aircraft in the formation as quickly as possible, using radar if available;

b) If normal separation cannot be obtained, the aircraft shall be given as much separation from each other as is possible and the formation given directions to enable them to leave controlled airspace by the shortest possible route.

3.4 In all cases where such clearances are requested, the controller of the ATSU concerned is to ensure that the leader of the formation is aware of the conditions of the clearance as detailed above.

3.5 The ATSU concerned is to ensure that the issuance of such clearances will not delay or in any way adversely affect normal civil flying operations.

4 **Reduced Weather Minima for SAAF Helicopters**

4.1 SAAF helicopters are authorised to operate outside of controlled airspace below 700ft above the ground or water and clear of cloud with a flight visibility of ¼ NM (453 metres).

4.2 SAAF helicopters may be granted Special VFR clearance to operate in a CTR clear of cloud with a ground visibility of ¼ NM (453 metres). Apart from the reduced weather minima, SAAF helicopters are subject to the normal rules for special VFR in CTRs as detailed in CAR 91.06.21.

Section 2 Air Traffic Services

Chapter 5 Flight Rules

1 Rules of Flight Types

1.1 Flights are classified into types according to the flight rules (regulations) under which the flight is conducted. The flight rules, which are detailed in the CAR & CATS, are:-

a) Instrument Flight Rules (IFR);
b) Visual Flight Rules (VFR);
c) Special Visual Flight Rules (SVFR).

1.2 All flights shall be conducted in accordance with the Rules of the air, CAR Part 91-Subpart 6, and either as a VFR, IFR or a Special VFR flight.

2 Visual Flight Rules

2.1 A VFR flight shall be conducted so that the aircraft is flown:-

a) With visual reference to the surface by day and to identifiable objects by night and at no time above more than scattered cloud within a radius of 5NM of the aircraft in flight; and

b) In conditions of visibility and distance from cloud equal to or greater than those specified below:

Type of Airspace	**Flight Visibility**	**Distance From Cloud Vertical - Horizontal**	
CTR – ATZ Class C or G	5KM/ 3NM	500 Feet	500 Feet
All Other Airspaces			
At or below 1000' above the surface by day only.	1.5KM	Clear of Clouds	
Above 1500' up to FL100 above the surface by day and night.	5KM	500 Feet	2000 Feet
Above FL100 up to and including FL200 by day and night.	8KM	1000 Feet	1.5KM

2.3 When an aircraft is flying in meteorological conditions equal to or greater than those in the table above, the aircraft is said to be in Visual Meteorological Conditions (VMC). A VFR flight shall always be conducted in VMC.

2.4 When an aircraft is flying in meteorological conditions less than those specified above, the aircraft is said to be in Instrument Meteorological Conditions (IMC).

2.5 Unless authorised by ATC on a Special VFR clearance, no VFR flight shall take off from, land at, or approach to land at an aerodrome within a CTR or fly within the Control Zone when the ground visibility is less than 1500m and/or the ceiling is less than 600ft.

2.6 South African Aviation Legislation does not forbid VFR flights by night, however, irrespective of the weather, ATCs should encourage all flights capable of operating under IFR and intending to operate in any Controlled, Advisory or Information airspace, except flights which do not intend leaving the aerodrome traffic circuit, to operate under IFR.

2.7 VFR flight within South Africa is not permitted above FL195 unless special dispensation has been granted by the Commissioner Civil Aviation in writing.

Note: *Controllers are to take cognisance that neighbouring International FIRs comply with the ICAO standard of FL145 for all VFR operations.*

3 Instrument Flight Rules

3.1 Aircraft may be flown in accordance with IFR irrespective of the meteorological conditions, however all aircraft flying above FL195 shall comply with IFR.

4 Changing From IFR to VFR Flight

4.1 Change from IFR to VFR flight is only acceptable when the pilot uses the specific expression "Cancel my IFR flight", together with changes to be made to his current flight plan.

4.2 No invitation to change from IFR to VFR is to be made by ATC, either directly or by inference.

4.2.1 The pilot on deciding to cancel the IFR flight plan and continue with VFR shall advise the ATC in the following manner: *"…cancelling IFR request to route VFR…"*

4.3 This change in the flight rules should be acknowledged by ATC with the phrase *"IFR flight cancelled at (Time)."*

1.1.

4.4 If an ATSU, accepting the change from IFR to VFR has reason to believe that IMC may be encountered along the route of flight, the pilot should be advised.

4.5 This change in the flight rules only affects the entries in Fields 8 and 15 of the flight plan and does not constitute a cancellation of the entire flight plan or the cancellation of search and rescue.

Note: *Pilots should consider the impact of the change to VFR on the Radio Communication Failure procedure before changing to VFR.*

5 Special VFR

5.1 A special VFR flight is a flight subject to prior authorisation from ATC but not subject to IFR and conducted by day, within a CTR within which compliance with IFR has been declared mandatory.

5.2 The minimum weather conditions under which the ATC may grant special VFR clearances are:-

a) By day only,

b) Within sight of ground;

c) Clear of cloud; and

d) With a ceiling of at least 600 feet and a ground visibility of not less than 1500m, except that for SAAF helicopters, ground visibility of one-quarter nautical mile shall apply.

5.3 Standard separation shall be provided between all special VFR flights and between special VFR flights and aircraft operating under IFR.

5.4 IFR flights must not be delayed in order to accommodate requests for a Special VFR clearance.

5.5 Authorisation for Special VFR flights will depend on local traffic conditions and other factors such as the extent of the flight proposed and whether air-ground communication can be maintained; i.e. it could require a shorter time interval between IFR flights to accommodate a Special VFR flight which can maintain radio contact with APP and report positions etc., than one which cannot do so.

5.6 ATC shall specify the conditions under which a Special VFR flight may be made, e.g. if the aircraft is equipped with an operational radio and Mode C transponder, ATC may specify that the pilot maintains radio guard and makes position reports while in the CTR or ATC may prescribe the route to be followed by the aircraft. ATC may also place time restrictions on a Special VFR clearance, such as "Clearance expires at .....(Time) " etc.

5.7 Aircraft operating Special VFR within a CTR when the zone has been declared IMC will not normally be given a specific altitude to fly; pilots will merely be instructed to remain clear of cloud and within sight of ground. If, however, it is necessary to provide vertical separation from aircraft above, the Special VFR aircraft is to be instructed not to fly above a specified altitude e.g. *"Cleared"*

……............. (Route) ....Special VFR, clear of cloud, in sight of ground, not above …....... feet".

5.8 Special VFR flights are intended to provide flexibility to pilots who are unable to comply with IFR. This flexibility however excludes those aircraft in the training category and will be instructed to remain on the ground.

5.9 Special VFR absolves the pilot-in-command from complying with IFR; however, it does not absolve the pilot-in-command from the responsibility of maintaining the minimum safe altitude prescribed in the CAR 91.06.32(1) (a) (b) (c).

5.10 A flight may be authorised for SVFR operation within a CTR to:

a) Enter a CTR for the purpose of landing;

b) Take-off and depart from a CTR;

c) To cross a CTR;

d) *Operate locally within a CTR.

Note: **This authorisation may include those aircraft that are engaged in crime-prevention or medevac operations.*

6 Types of Approaches

6.1 IFR in Controlled Airspace

In controlled airspace the ATSU shall provide standard ATC separation while the pilot shall be responsible for terrain clearance criteria.

6.1.1 Instrument Approach

a) If standard instrument approach and missed approach procedures are published, no specific instructions need be given. If, however, the pilot requests information on the procedure, the following shall be passed to him:-

i. Type of approach and facility;

ii. Initial approach altitude;

iii. Outbound track in degrees magnetic;

iv. Procedures turn (left or right);

v. Final approach track in degrees magnetic;

vi. Obstacle clearance limit;

vii. Missed approach procedure, when deemed necessary.

b) Even if visual reference to the ground is established before completion of the approach procedures, a pilot will normally complete the entire procedure. At his request, however, clearance may be granted to break off the instrument procedure

and proceed directly to the airfield visually. Nevertheless, they will continue to be an

IFR flight unless they choose to change to VFR flight rules in VMC and cancels their IFR flight plan.

c) Where Instrument Approach Procedures exists for the destination airport in controlled airspace an IFR flights normally complete an Instrument Approach Procedure.

d) Aircraft executing VMC, Visual or Instrument approaches under approach control need not be separated by the standard minima from traffic operating within the aerodrome traffic circuit under aerodrome control.

e) A particular approach procedure may be specified to expedite traffic. The omission of a specified approach procedure will indicate that *any* authorised approach may be used at the discretion of the pilot. Thus care should be taken to specify the approach intended for the aircraft when clearance for the approach is given to prevent the crew complying with a different than planned approach i.e. completing a VOR Non-precision approach instead of an ILS Precision approach.

6.1.2 **Visual Approach**

a) To expedite traffic IFR flights may be cleared to execute visual approaches, whilst still maintaining IFR Flight Plan status, when:

   i. The pilot can maintain visual reference to the terrain; *and*

   ii. The reported cloud ceiling is above the initial approach altitude;

   OR

   The pilot reports at the Initial approach level or at any time during instrument approach procedure that the meteorological conditions are such that with reasonable assurance a visual approach and landing can be completed; *and*

   iii. The aircraft is within 25NM of the destination aerodrome;

   iv. A Visual Approach may be requested by the pilot or initiated by an ATC. When initiated by the ATC the concurrence of the pilot is required.

   v) The reported ceiling is at or above the level of the beginning of the initial approach segment for the aircraft so cleared; or

   vi) The pilot reports at the level of the beginning of the initial approach segment or at any time during the instrument approach procedure that the meteorological conditions are such that with reasonable assurance a visual approach and landing can be completed.

Note: *The following RT may be used:*

Pilot request: *"Field (terrain) in sight, request visual approach".*

ATC response: *"……….. (callsign) are you able to accept a visual approach runway…?"*

b) During a visual approach the ATSU shall remain responsible to provide separation between all aircraft. The pilot shall remain responsible for terrain clearance as well as remaining within controlled airspace.

c) Controllers shall exercise caution in initiating a visual approach when there is reason to believe that the flight crew concerned is not familiar with the aerodrome and its surrounding terrain. Controllers should also take into consideration the prevailing traffic and weather conditions when initiating visual approaches.

d) Standard separation shall be provided between an aircraft cleared to execute a visual approach and all other controlled flights.

Note 1: *The term visual approach is only associated with an instrument approach procedure, where the Instrument Approach is abbreviated in total or in part.*

Note 2: *Separation may be based upon pilot or ATC sighting and maintaining visual separation between succeeding aircraft in the vicinity of an aerodrome.*

Note 3: *When an aircraft is receiving vectors, a clearance for a visual approach shall only be issued when a pilot reports the aerodrome in sight OR the preceding aircraft in sight, at which time the vectoring/control will be terminated; however the aircraft will still be provided with* an ATS surveillance *service.*

6.1.3 Approach Maintaining VMC

a) A VMC Approach enables the pilot to descend below the initial approach altitude while maintaining VMC.

b) An IFR flight in controlled airspace may be cleared by ATC to execute a VMC Approach, whilst still maintaining IFR Flight Plan status, when:

i. Requested by the pilot;

Note: *The following RT may be used by the pilot:*

"…request VMC Approach…"

ii. Metrological conditions are such that there is reasonable assurance that a VMC Approach and landing can be completed;

iii. The pilot can maintain visual reference to the terrain.

c) During a VMC Approach the ATSU shall remain responsible to provide separation between all aircraft as stipulated below:

i. *BY DAY:* Standard separation may be reduced, subject to the agreement of all pilots involved. When such a reduction is permitted, essential traffic information shall be passed and the pilot is responsible for his own separation.

ii. *BY NIGHT:* ATC shall ensure that standard separation is applied to all flights.

d) During a VMC Approach the pilot shall remain responsible for terrain clearance.

Note 1: *It is not required to change the IFR status of a flight to VFR when a Visual Approach or VMC approach is made in controlled airspace.*

Note 2: *Due to the nature of traffic situations at busy aerodromes the reduction of separation may not be feasible.*

Note 3: *To meet the requirements for separation, "Reduced Separation in the Vicinity of the Aerodrome" may be applied.*

6.2 IFR Flights Leaving Controlled Airspace

6.2.1 When leaving controlled airspace, the ATSU shall provide standard ATC separation until the aircraft has vacated controlled airspace. ATSU approval is required when descending out of controlled airspace to ensure separation from other traffic within controlled airspace. Where an information service is provided outside of controlled airspace, the pilot shall be provided with traffic information.

6.2.2 The pilot shall remain responsible for terrain clearance criteria throughout.

6.2.3 An IFR flight in controlled airspace routing towards an uncontrolled aerodrome may be descended by the ATSU to the lowest limit of the controlled airspace. Further descent below the limit of controlled airspace shall be at the discretion of the pilot.

6.2.4 Where a radar control service is provided in controlled airspace, the aircraft may be descended by the ATSU to the lowest limit of the controlled airspace, or to the radar terrain clearance limit whichever is higher. Further descent below this must be made at the discretion of the pilot.

6.2.5 In that phase of flight where the pilot requests descent that will take the aircraft outside of controlled airspace, the following RT may be used:

Pilot: "Request further descent maintaining VMC" or "Request further descent into uncontrolled airspace"

ATC: "Descend as required and report leaving controlled airspace"

***Note 1**: Radar Control Service can only be provided in controlled airspace.*

***Note 2:** The ATSU and the pilot shall have joint responsibility for terrain clearance only while the aircraft is provided with a radar vectors.*

***Note3:** The lowest limit of the controlled airspace or the radar terrain clearance may not comply with the minimum level required for IFR flights as stipulated in SA-CAR Part 91.06.32 and Part 91.07.2 respectively.*

6.3 **IFR in uncontrolled airspace**

6.3.1 An aircraft may not be *cleared* by an ATSU for a visual approach or a VMC approach in uncontrolled airspace.

6.3.2 Where an Information Service is provided outside of controlled airspace, the pilot will be given traffic information and the pilot shall remain responsible for own separation and terrain clearance criteria throughout.

6.3.3 An IFR flight in uncontrolled airspace may execute a cloud-break procedure, whilst still maintaining IFR Flight plan status.

6.4 **VMC Approach in Uncontrolled Airspace**

6.4.1 An IFR flight in uncontrolled airspace may execute a VMC approach whilst still maintaining IFR flight plan status, when in VMC and:

a) Metrological conditions are such that there is reasonable assurance that a VMC approach and landing can be completed; and

b) The pilot can maintain visual reference to the terrain.

Section 2 Air Traffic Services

Chapter 6 Altimeter Setting Procedure

1 Introduction

1.1 The following procedures describe the methods intended for use in providing adequate vertical separation between aircraft and terrain during all phases of flight. The methods are based on the following principles:

a) During flight, when at or below a fixed altitude called the transition altitude, an aircraft is flown at altitudes determined from an altimeter set at sea level pressure (QNH) and its vertical position is expressed in terms of altitude;

b) During flight above the transition altitude an aircraft is flown along surfaces of constant atmospheric pressure based on an altimeter setting of 1013.2 Hectopascals and throughout this phase of a flight the vertical position of an aircraft is expressed in terms of flight level;

c) The change in reference from altitude to flight levels, and vice versa, is made, when climbing, at the transition altitude and, when descending, at the transition level;

d) The adequacy of terrain clearance during any phase of a flight may be maintained in a number of ways, depending upon the facilities available in a particular area, the recommended methods in the order of preference being:-

i) The use of current QNH reports from any adequate network of QNH reporting stations;

ii) The use of such QNH reports available combined with other meteorological information such as the forecast lowest mean sea level pressure for the route or portions thereof;

iii) Where current information is not available, the use of values of the lowest altitudes of flight levels, derived from climatological data.

e) During the approach to land, terrain clearance may be determined by using the QNH altimeter setting (giving altitude) or a QFE setting (giving height above the QFE datum).

f) Altimeter settings shall be given in hPa in four digits together with the unit of measurement used, and shall be rounded down to the nearest lower whole hPa.

2 System of Flight Levels

2.1 Flight level zero shall be located at the atmospheric pressure level of 1013.2 hPa. Consecutive flight levels shall be separated by a pressure interval corresponding to at least 500ft (152.4 meters) in the Standard Atmosphere.

2.2 Flight levels shall be numbered according to the following table which indicates the corresponding height in the Standard Atmosphere in feet:-

Flight Level Number	**Height In Atmosphere Feet**	**Standard (1013.2 hPa) Meters**	**Flight Level Number**	**Height In Atmosphere Feet**	**Standard (1013.2 Pa) Meters**
10	1,000	300	50	5,000	1,500

15	1,500	450	…	…..	…..
20	2,000	600	100	10,000	3,050
25	2,500	750	…	…..	…..
30	3,000	900	150	15,000	4,550
35	3,500	1,050	…	…..	…..
40	4,000	1,200	200	20,000	6,100
45	4,500	1,350	500	50,000	15,250

2.3 Minimum cruising level

2.4 Area control centres shall, when circumstances warrant it, determine the lowest usable flight level or levels for the whole or parts of the control area for which they are responsible, and use it when assigning flight levels and pass it to pilots on request.

2.5 Assignment of Cruising Levels

2.5.1 In so far as practicable, cruising levels of aircraft flying to the same destination shall be assigned in a manner that will be correct for an approach sequence at the destination.

2.5.2 An aircraft at a cruising level shall normally have priority over other aircraft desiring that cruising level. When two or more aircraft are at the same cruising level, the preceding aircraft shall normally have priority.

2.5.3 Except when traffic conditions and co-ordination procedures permit authorisation of cruise climb, an ATC unit shall normally authorise only one cruising level for an aircraft beyond its control area, i.e. that level at which the aircraft will enter the next control area whether contiguous or not. It is the responsibility of the accepting ATC unit to issue clearance for further climb as appropriate. When relevant, aircraft will be advised to request en route any cruising level changes desired.

2.5.4 Aircraft authorised to employ cruise climb techniques shall be cleared to operate between two flight levels or above a specified level.

3 Transition Altitude

3.1 A transition altitude is specified for each aerodrome in the SA-AIP or AICs and shall be indicated on the appropriate charts.

3.2 The transition altitude for all points of departure and arrival within 25 nautical miles of any aerodrome listed in the SA-AIP or AICs shall be the same as that listed for the relative aerodrome.

3.3 In the case of VMC flights departing from, or arriving at points beyond 25 nautical miles from any of the aerodromes listed shall observe the height of 2000ft above the ground or water as the transition altitude.

3.4 In the case of IMC flights departing from, or arriving at points beyond 25 nautical miles from any of the aerodromes listed shall observe the lowest safe cruising altitude as the transition altitude.

3.5 Where two or more closely spaced aerodromes are located so as to require coordinated procedures, a common transition altitude shall be established. This common transition altitude shall be the highest of the transition altitudes that would result for the aerodromes if separately considered.

3.6 The height above the aerodrome of the transition altitude shall be as low as possible; normally this should not be less than 3,000 ft.

3.7 The calculated height of the transition altitude shall be rounded up to the next full ***100ft.***

4 Transition Levels

4.1 Transition levels will be adjusted when barometric pressure changes beyond specified limits so that the transition level will never be less than 1000ft above the transition altitude.

4.2 The Air Traffic Service Unit at aerodromes will provide the current transition level for their aerodrome, including points within 25 nautical miles of their aerodrome in the approach and landing instructions.

4.3 VMC flights intending to land at points beyond 25 nautical miles from any of the aerodromes listed shall observe the height of 3000 ft above the ground or water as the transition level.

4.4 In IMC, flights intending to land at points beyond 25 nautical miles from any of the aerodromes listed, shall observe the flight level 500ft above the lowest safe altitude as the transition level.

4.5 Where two or more closely spaced aerodromes are located so as to require coordinated procedures and a common transition altitude, a common transition level shall be used at any one time.

Note: *The transition level is normally passed to aircraft in the approach and landing clearances.*

5 Transition from Flight levels to Altitudes and Vice Versa

5.1 The vertical position of an aircraft when at or below the *transition altitude* shall be expressed in terms of *altitude*.

5.2 The vertical position of an aircraft when at or above the *transition level* shall be expressed in terms of *flight levels*.

5.3 While passing through the transition layer, vertical position shall be expressed in terms of flight levels when ascending and in terms of altitude when descending.

6 Take-Off and Climb

6.1 A QNH altimeter setting shall be made available to aircraft in taxi instructions prior to take-off.

6.2 A QFE altimeter setting shall be made available to aircraft upon request if available.

6.3 On reaching the transition altitude at least one altimeter in the aircraft shall be set to 1013.2 hPa (29.92 inches of mercury) and thereafter the vertical positioning of the aircraft shall be referred to in flight levels.

Note: *On reaching the transition altitude pilots will re-set their altimeters to 1013.2 hPa without requesting ATC permission to do so, nor is it necessary to advise ATC that the change has been made.*

7 En-Route

7.1 Vertical Separation

7.1.1 Vertical separation of aircraft during en-route flight at and below the transition altitude shall be assessed in terms of altitude.

7.1.2 Vertical separation of aircraft during en-route flight above the transition altitude shall be assessed in terms of flight levels.

7.1.3 Aircraft shall be flown at altitudes or flight levels as applicable corresponding to the magnetic tracks as indicated in the "Semi-circular Table".

7.2 Terrain Clearance

7.2.1 The SAWS will make available to pilots, on request, the forecast lowest en-route QNH, to enable pilots to determine the lowest flight level which will ensure adequate terrain clearance for routes or segments of routes on which this information is required.

7.2.2 The lowest safe flight level may be determined by one of the following ways:-

a) If there is more than one altimeter in the aircraft, set the sub-scale of one of them to the forecast lowest QNH. The readings of this altimeter can then be compared with the elevations shown on the map of the aircraft's route to ensure that the minimum 1500ft terrain clearance, where applicable does exist, or

b) Make a pre-flight check to ensure that the flight level selected will provide the minimum terrain clearance by determining the relationship which will exist between the forecast lowest QNH and the altimeter sub-scale setting (1013.2 hPa).

Note: *The danger signal is when the QNH is lower than the sub-scale setting the aircraft will be lower than indicated.*

8 Approach and Landing

8.1 A QNH altimeter setting shall be made available to aircraft in approach clearances and in clearances to enter the traffic circuit.

8.2 A QFE altimeter setting, clearly identified as such, should be made available in approach and landing clearances on request.

8.3 The vertical positioning of aircraft during approach shall be controlled by reference to flight levels until reaching the transition level below which vertical positioning shall be reference to altitudes, except as provided for in paragraph 8.4.

Note: *This does not preclude a pilot from using a QFE setting for terrain clearance purposes during the final approach to the runway.*

8.4 After an approach clearance has been issued and the descent has commenced, the vertical positioning of an aircraft above the transition level may be by reference to altitude (QNH), provided that level flight above the transition altitude is not indicated or anticipated.

Note: *This exception is intended to apply primarily to turbine engine aircraft for which an uninterrupted descent from a high altitude is desirable.*

8.5 On reaching the transition level, pilots will reset their altimeters to the QNH without requesting ATC permission to do so, nor is it necessary to advise ATC that the change has been made.

9 Missed Approach

9.1 The relevant parts of the previous paragraphs 6, 7, and 8 shall apply in the event of a missed approach.

10 Procedures Applicable to ATSUs

10.1 General

10.1.1 ATSUs shall ensure that the latest QNH is always readily available for transmission to aircraft and for determining the current transition level.

10.1.2 ATSUs shall pass to aircraft the QFE on request if available.

10.1.3 Both of these settings must be rounded *down* to the nearest whole hPa before being transmitted to the pilot. However, the settings are to be given to the nearest tenth of a hPa if requested.

10.2 Responsibility for Determining the Current Transition Level

10.2.1 Approach control is responsible for determining and providing to arriving aircraft the current transition level for their CTR. This level will also apply as the transition level for any arriving aircraft landing within 25NM of that ATSU.

10.2.2 At manned aerodromes which are not within a CTR, the TWR or AFISU shall be responsible for determining the transition level for their aerodrome and for any arriving aircraft landing within 25NM of the aerodrome.

10.2.3 On commencement of the shift or at such other times as specified in the SSI Manual, either approach control, TWR or AFIS as applicable shall ascertain the current QNH and determine from it the current transition level.

10.2.4 Approach control, TWR or AFIS as applicable must at all times be on the alert for changes in the QNH which will necessitate a change in the current transition level accordingly without delay.

10.3 **Determination of the Current Transition Level**

10.3.1 Transition levels shall be determined with reference to the requirements as per the unit SSI Manual.

10.3.2 In the table below, the current QNH must be applied to the table relevant to the station. The flight level indicated against the pressure range within which the current QNH falls, shall be the current transition level.

10.3.3 This table ensures 1000 feet vertical separation between an aircraft at transition altitude and one at transition level.

10.3.4 The critical stage is reached when the QNH value drops to the QNH figure given in the first column of the table. Immediately the QNH drops below this figure the transition level must be changed in accordance with the table without delay.

10.3.5 QNH pressures at which transition level shall be altered:

QNH in hPa		
959	-	977
978	-	995
996	-	1013
1014	-	1032
1033	-	1050
1051	-	above

10.3.6 All ATSUs should include in their SSI Manual a table as shown below in relation to their own transition level.

Example:

Alexander Bay	**Transition Altitude**	**QNH**			**Transition Level**
	6,000ft	959	-	977	85
		978	-	995	80
		996	-	1013	75
		1014	-	1032	70
		1033	-	1050	65
		1051	-	above	60

10.4 **Recording of Transition Level in Force**

10.4.1 On opening or the commencement of a shift, or at such other time as specified in the Station Standing Instruction Manual, the official meteorological QNH and transition level shall be entered into the occurrence log.

10.4.2 Whenever it becomes necessary to change the transition level, an entry to that effect, giving the QNH and transition level introduced shall be made in the occurrence log.

10.5 **Check on Pressure Sensor Instruments**

10.5.1 At least once per shift the pressure sensor instrument at an ATSU should be checked for accuracy against the QNH obtained from the meteorological office.

10.5.2 Whenever the QNH value is updated from the meteorological office, it is to be compared with the QNH value it replaces or against the pressure sensor instrument for obvious errors.

10.5.3 Any discrepancy of 3 hPa or more of the QNH value it replaces, or than the reading obtained from the pressure sensor instrument, must be reported to the meteorological office immediately and the correct QNH value verified.

Section 2 **Air Traffic Services**

Chapter 7 Semi-Circular Rule

1 Flights Obliged To Comply With the Semi-Circular Rule

1.1 The following flights are obliged to comply with the Semi-Circular Rule when in level cruising flight:

a) IFR flights outside of controlled airspaces;

b) VFR flights, except those operated in class B, C, D and E airspaces, operating at 1500ft or more above the surface of the earth;

c) All flights at night outside of controlled airspaces.

2 Semi-Circular Rule Table

2.1 When complying with the Semi-Circular rule, aircraft shall be flown at flight level corresponding to the magnetic tracks shown in the following table:

Magnetic Tracks			
000° to 179° Odd		*180° to 359° Even*	
IFR Flight Level	*VFR Flight Level*	*IFR Flight Level*	*VFR Flight Level*
10	*-*	*20*	*-*
30	*35*	*40*	*45*
50	*55*	*60*	*65*
Etc. to	*Etc. to*	*Etc. to*	*Etc. to*
	195		*185*

	No VFR flights above FL195		*No VFR flights above FL195*
410		*400*	
Then		*then*	
450		*430*	
490		*470*	
etc.		*etc.*	

Aircraft that are not RVSM approved may not operate between FL290 to FL410 inclusive unless the aircraft status is a State aircraft.

Note: *In the case of tracks where the changes of magnetic variation encountered between navigational aids would change the magnetic track from one semi-circle to the other, the mean variation should be used. Where the track falls on the dividing line when using mean variation, the variation used must be greater than the mean. The ATSU concerned with routes where this happens must liaise to ensure that they are both using the same variations, thus ensuring that opposite traffic selects flight levels from different columns in the table.*

Section 2 Air Traffic Services

Chapter 8 Flight Plans

1 Filing of Flight Plans

1.1 The filing of a flight plan is mandatory in the following cases:

a) International flights;

b) All flights in the public transport operation or public transport of cargo operation categories;

c) All flights for which overdue action is required;

d) All flights operating between aerodromes where an ATSU is operating.

1.2 Flight plans shall also be filed for all flights conducted in controlled or advisory airspaces, provided that this requirement shall not apply if:-

a) It is a local flight;

b) It is going to cross an airway or advisory route at right angles;

c) A VFR flight departing from, or arriving at an aerodrome within an ATZ Class C/ G or a CTR, and the remainder of the flight will be conducted clear of all controlled and/or advisory airspaces.

Note 1: *Flight plans may be filed for any flight.*

Note 2: *For compilation of a flight plan see Section 9, Chapter 5.*

1.3 Flight plans for IFR flights within controlled, advisory and information airspaces should be filed in sufficient time before ETD to allow the ATSU to fit the intended flight into the traffic pattern. ATC may, if necessary, insist on:-

a) Thirty minutes warning before take-off when the point of departure is within a CTR or when the flight will be joining controlled or advisory airspace almost immediately after take-off; or

b) Ten Minutes warning before controlled or advisory airspace will be entered when filed in flight.

1.4 In the event of a delay of thirty (30) minutes in excess of the estimated off-block time for a scheduled flight or a delay of one hour for a non-scheduled or general aviation flight for which a flight plan has been submitted, the flight plan should be amended or a new flight plan submitted and the old flight plan cancelled, whichever is applicable.

1.5 A flight plan to be submitted during flight should normally be transmitted to the ATSU in charge of the FIR, control area, advisory area or advisory route in or on which the aircraft is flying; or in, or through which the aircraft wishes to fly or to the aeronautical telecommunication station serving the ATSU concerned. When this is not practicable, the flight plan should be transmitted to another ATSU for retransmission as required to the appropriate ATSU.

1.6 Where relevant, such as in respect of ATSUs serving high or medium density airspace, the ANSP should prescribe conditions and/or limitations with respect to the submission of flight plans during flight to those specified sectors.

Note: *If the flight plan is submitted for the purpose of obtaining air traffic control service, the aircraft is required to wait for an air traffic control clearance prior to proceeding under the conditions requiring compliance with air traffic control procedures.*

If the flight plan is submitted for the purpose of obtaining air traffic advisory service, the aircraft is required to wait for acknowledgment of receipt by the unit providing the service.

2 Acceptance of a Flight Plan

2.1 The first air traffic services unit receiving a flight plan or any changes shall:

a) Check it for compliance with the format and data conventions;

b) Check it for completeness and, to the extent possible, for accuracy;

c) Take action, if necessary, to make it acceptable to the air traffic services; and

d) Indicate acceptance of the flight plan or change thereof, to the originator.

2.2 **Acceptance of IFR Flight Plans**

2.2.1 The filing of an IFR flight plan indicates that the pilot is qualified and that the aircraft is equipped for IFR flight and further, that the pilot-in-command will conform to all provisions of IFR.

2.2.2 This does not preclude an ATC from verifying whether a pilot is qualified or whether the aircraft is suitable equipped for IFR flight when the controller has reason to believe otherwise.

3 Repetitive Flight Plans (RPL)

3.1 The repetitive flight plan scheme is a more convenient method of filing flight plans for flights that operate regularly. Only one plan is filed and the details are brought forward for each flight.

Note: *The procedures governing the use of RPL's are contained in ICAO Doc 4444, Chapter 16, paragraph 16.4.*

4 Booking Out

4.1 Pilots who do not file a flight plan are required to inform the air traffic service unit at the aerodrome of their departure where the filing of a flight plan is not mandatory. This is referred to as booking out. The air traffic service unit is to record the departure. No further action is required.

5. SEARCH AND RESCUE

5.1 Search and rescue action

a) Search and rescue action shall be instituted automatically in respect of: -

i. all flights between aerodromes where air traffic services are provided; and

ii. all flight conducted in controlled airspace, excluding flights crossing an airway at right angles, for which flight plans are filed prior to departure.

b) Search and rescue action shall be instituted in respect of all domestic and international flights to aerodromes where air traffic services are not provided, for which flight plans are filed prior to departure and the pilot-in-command has specifically requested such search and rescue action.

c) Search and rescue action shall be instituted in respect of flights for which flight plans are filed in flight when such action is specifically requested by the pilot-in-command.

d) Pilots-in-command of a flight for which search and rescue action has been requested, and fails to cancel search and rescue action, shall be responsible for any costs incurred by the air traffic service unit concerned for the provision of alerting or supporting services.

5.2 The Search and Rescue action referred to in paragraph (b) above, may only be instituted after a specific time. Such time shall not be less than one hour after the estimated time of arrival at the destination aerodrome and the air traffic services unit to which the arrival notification will be made.

5.3 For flights to be conducted in controlled airspace during a portion of the flight, and then landing at an unmanned aerodrome, section 5.1 a) ii) and b) will apply. This means that it is essential for the pilot-in- command to ensure that the air traffic service unit is informed when the flight is leaving or entering controlled airspace, otherwise search and rescue action will be taken on the missed position report whilst in controlled airspace.

e.g., A flight from Cape Town to Victoria West via SLV VOR at flight level 090 requested search and rescue action at destination.

This flight shall be operating in controlled airspace from Cape Town to SLV VOR (i.e., Cape Town controlled airspace and airway UA405). Should a pilot fail to report at SLV VOR, air traffic control shall commence with preliminary search and rescue action 5 minutes after the time of the expected report at SLV VOR. Alternatively, if a position report is received at SLV VOR, search and rescue shall only commence at the time stated in the flight plan at destination if an arrival report or closure of flight plan report has not been received by the air traffic service unit.

If a pilot-in-command of this flight has stated RMK/SARNIL in Field 18 of the flight plan and failed to report at SLV VOR, the responsible ATSU would nevertheless commence preliminary search and rescue action 5 minutes after the time of the expected report at SLV VOR.

5.4 For a flight that is landing at an aerodrome where air traffic service unit is in operation, a pilot may assume that the ATSU will close the flight plan on arrival at such an aerodrome.

5.5 Search and rescue action in respect of missed position reports from aircraft flying in uncontrolled airspace shall only be instituted in respect of aircraft which are capable of reporting positions throughout the flight. In this case the action instituted shall be similar to that instituted for aircraft flying in controlled airspace. It must be noted, however, that when a flight is bound for an aerodrome where air traffic service unit is not in operation and a pilot-in-command states SAR/NIL in Field 18 of the flight plan, search and rescue action shall not be instituted in respect of missed position reports outside controlled airspace.

5.6 A pilot in command who request search and rescue as per paragraph b) and c) above assume the responsibility to ensure that an ATSU is informed on completion of, or abandoning, their flight. Search and rescue may be cancelled on R/T by using one of the following R/T phraseologies:

e.g., cancel my search and rescue.

If a pilot in command does not receive acknowledgement of his or her message on R/T, he or she must inform his or her arrival to the air traffic service unit indicated in Field 18 of his or her flight plan before the expiry of the search and rescue time stated on the flight plan.

5.7 In order to avoid any misunderstanding between a pilot and air traffic service unit, Field 18 of the flight plan form must be endorsed as follows: -

a) RMK/SARNML must be indicated when the flight is bound for an aerodrome where air traffic service unit is in operation. RMK/SARNML must not be indicated when the flight is bound for an aerodrome where an ATSU is not in operation. This type of SAR shall mean the following: -

Search and rescue action shall be instituted automatically in the event of a missed position report while the aircraft is flying within controlled airspace, or in the event of non-arrival at destination.

Search and rescue action will not be provided while the aircraft is flying in uncontrolled airspace, except in an emergency.

b) RMK/SARNML/ENROUTE may be indicated when the flight is bound for an aerodrome where an ATSU is in operation and the whole or portion of the flight is conducted outside controlled airspace. RMK/SARNML/ENROUTE must not be indicated when the flight is bound for an aerodrome where an ATSU is not in operation. This type of SAR shall mean the following: -

Search and rescue action shall be instituted automatically in the event of a missed position report while the aircraft is flying within controlled airspace or in the event of a non-arrival at destination;

Search and rescue action shall be instituted in the event of a missed position report while the aircraft is flying in uncontrolled airspace;

when requesting this type of SAR the pilot-in-command of the aircraft must be reasonably certain that it shall be possible to make position reports throughout the flight and that the required reports will be made.

c) SAR after a specific time – this type of SAR may be indicated when the flight is bound for an aerodrome where an ATSU is not in operation and shall be shown as follows: -

SAR/…. (air traffic services unit to be notified of arrival)…. (time by which notification of arrival will be made).

E.g., RMK/SARFABL0930. – meaning that BRAM FISCHER International Airport will be notified of ARRIVAL by 0930 (UTC).

It shall mean the following: -

Search and rescue action shall be instituted automatically in the event of a missed position report while the aircraft is flying within controlled airspace.

Search and rescue action shall be instituted automatically in the event of the ATSU (air traffic service unit) which is to be notified of arrival not receiving the arrival notification by the time specified in the flight plan;

Search and rescue action shall not be provided while the aircraft is flying in uncontrolled airspace, except in an emergency.

d) SARNIL – used when search and rescue action is not required.

RMK/SARNIL may only be used when the flight is bound for an aerodrome where an ATSU is not in operation. In this case search and rescue action shall be instituted automatically in the event of a missed position report while the aircraft is flying within controlled airspace. When the aircraft has reported leaving controlled airspace no further search and rescue action will be provided, except in an emergency.

e) SAR AFTER A SPECIFIC hour/s from ETA (EXPECTED TIME OF ARRIVAL) –

This type of SAR may be indicated when the flight is bound for an aerodrome where an ATSU is not in operation and shall be shown as follows:

SAR/…. (air traffic services unit to be notified of arrival) (number of hours by which notification of arrival shall be from the ETA).

e.g. RMK/SARFAORETA1HR OR RMK/SARFALAETA2HR

It shall mean the following:

Search and rescue action shall be instituted automatically in the event of a missed position report while the aircraft is flying within controlled airspace.

Search and rescue action shall be instituted automatically in the event of the ATSU which is to be notified of the arrival, not receiving the arrival notification by the ETA of the aircraft plus the stipulated hour/s.

Search and rescue action shall not be provided while the aircraft is flying in uncontrolled airspace, except in an emergency.

f) SAR AFTER SPECIFIED TIME EN-ROUTE –

This type of SAR may be indicated when the flight is bound for an aerodrome where an Air Traffic Service is not in operation, and will be shown as follows:

SAR/ (Air Traffic Services Unit to be notified of arrival time by which notification of arrival will be made en-route.

e.g., SARFABL0930ENROUTE.

It shall mean the following: -

Search and Rescue action shall be instituted automatically in the event of a missed position report while flying in controlled airspace;

Search and Rescue action shall be instituted automatically in the event of the Air Traffic Services Unit, which is to be notified of arrival not receiving the arrival notification by the time specified in the flight plan;

Search and Rescue action shall be instituted in the event of a missed position report while the aircraft if flying in uncontrolled airspace;

When requesting this type of SAR, the pilot-in-command of the aircraft must be reasonably certain that it will be possible to make position reports throughout the flight and that the required reports will be made.

5.8 In this context an Air Traffic Services Unit shall mean a Unit manned by personnel authorised by the:

The Authority or South African National Defence Force (South African Air Force).

Section 2 Air Traffic Services

Chapter 9 Air traffic Control Clearances

1 General

1.1 Clearances are issued solely for expediting and separating air traffic and are based on known traffic conditions which affect safety in aircraft operation. Such traffic conditions include not only aircraft in the air and on the manoeuvring area over which control is being exercised, but also any vehicular traffic or other obstructions not permanently installed on the manoeuvring area in use.

1.2 If an air traffic control clearance is not suitable to the pilot-in-command of an aircraft, the flight crew may request and, if practicable, obtain an amended clearance.

1.3 The issuance of air traffic control clearances by ATSUs constitutes authority for an aircraft to proceed only in so far as known air traffic is concerned. ATC clearances do not constitute authority to violate any applicable regulations for promoting the safety of flight operations or for any other purpose; neither do clearances relieve a pilot-in-command of any responsibility whatsoever in connection with a possible violation of applicable rules and regulations.

1.4 ATC units shall issue such ATC clearances as are necessary to prevent collisions and to expedite and maintain an orderly flow of air traffic.

1.5 ATC clearances shall be issued early enough to ensure that they are transmitted to the aircraft in sufficient time for flight crews to comply with the contents of the clearance.

2 Contents of Air Traffic Control Clearances

2.1 Clearances shall contain positive and concise data and shall, as far as practicable, be phrased in a standard manner.

2.2 Clearances shall contain the following in the order listed:

a) Aircraft identification;

b) Clearance limit;

c) Route of flight;

d) Level(s) of flight for the entire route or part thereof and changes of levels if required;

e) Any necessary instructions or information on other matters such as SSR transponder operation, approach or departure manoeuvres, communications and the time of expiry of the clearance.

Note: *The time of expiry of the clearance indicates the time after which the clearance will be automatically cancelled if the flight has not been started.*

2.3 Additional instructions included in clearances relating to levels shall consist of:

a) Cruising level(s) or, for cruise climb, a range of levels, and, if necessary, the point to which the clearance is valid with regard to the level(s);

b) Levels at which specified significant points are to be crossed, when necessary;

c) The place or time for starting climb or descent, when necessary;

d) The rate of climb or descent, when necessary;

e) Detailed instructions concerning departure or approach levels, when necessary;

d) Any special instructions e.g. rate of climb or descent, SIDs, STARs etc.

Note: *Personnel relaying clearances to aircraft shall transmit such clearances in the exact phraseology in which they are received (See Section 8 for phraseologies).*

3 Clearance Limit

3.1 A clearance limit is the point to which an aircraft is granted an Air Traffic Control clearance and shall be specified by naming:

a) An aerodrome;

b) A significant point; or

c) A controlled airspace boundary.

3.2 An aircraft will be cleared to the aerodrome of first intended landing when:

a) The flight is planned to remain within controlled airspace throughout the flight; or

b) The flight intends to leave controlled airspace, pass through uncontrolled airspace, and re- enter controlled airspace. Such clearance will only be valid for those portions of the flight which are conducted within controlled airspace.

3.3 In both of the above cases such clearances may only be issued when:

a) Prior to departure the flight will be co-ordinated between all ATSUs concerned; or

b) There is reasonable assurance that prior co-ordination will be effected ahead of the aircraft's passage.

3.4 To make the position quite clear to pilots, the following phrase shall be added to all clearances for flights which will be leaving controlled airspace:-

3.5 In cases where the requirements in section 3.3 cannot be achieved, an aircraft shall be cleared to a point where coordination is assured prior to aircraft reaching such a point or at such a point, such an aircraft shall receive further clearance, holding instructions as appropriate.

3.6 When it becomes apparent to ATCU that traffic additional to that already accepted cannot be accommodated within a given period of time at a particular location or in a particular area or may be accommodated at a given rate, that ATSU shall advise ATFM unit and the appropriate ATSU. A Pilot of an aircraft destined for such location or area in question and an operator concerned shall be informed of the delays expected or restrictions that shall be applied.

"....to leave controlled airspace at " (CTA Boundary/CTR Boundary/ Significant position, etc).

4 Routes

4.1 Every endeavour shall be made to clear aircraft via the route or routes requested, where practicable.

4.2 The route of flight shall be detailed in each clearance when deemed necessary. The phrase *"cleared flight planned route"* may be used to describe any route or portion thereof provided the route or portion thereof is identical to that filed in the flight plan and sufficient routing details are given to definitely establish the aircraft on its route.

4.3 The phrase "*cleared flight planned route"* shall not be used when granting a reclearance.

4.4 The phrases "*cleared (designation) departure"* or *"cleared (designation) arrival"* may be used when standard departure or arrival routes have been established by the SACAA and published in the Aeronautical Information Publication (AIP).

Note.— See 6.3 2.3 pertaining to standard clearances for departing aircraft and 6.5.2.3 pertaining to standard clearances for arriving aircraft.

4.5 Subject to airspace constraints, ATC workload and traffic density, and provided coordination can be effected in a timely manner; an aircraft should whenever possible be offered the most direct routing.

5 En-route Aircraft

5.1 General

5.1.1 An ATC unit may request an adjacent ATC unit to clear aircraft to a specified point during a specified period.

5.1.2 After the initial clearance has been issued to an aircraft at the point of departure, it will be the responsibility of the appropriate ATC unit to issue an amended clearance whenever necessary and to issue traffic information, if required.

5.1.3 When requested by the flight crew, an aircraft shall be cleared for cruise climb whenever traffic conditions and coordination procedures permit. Such clearance shall be for cruise climb either above a specified level or between specified levels.

5.2 Cruising Levels

5.2.1 Normally, the cruising level requested in the flight plan is to be allocated, but if this level is not available, the nearest vacant level is to be allocated.

5.2.2 When two or more aircraft are at, or are requesting, the same cruising level, the preceding aircraft shall normally have priority.

5.3 Clearances Relating to Supersonic Flight

5.3.1 Aircraft intending supersonic flight shall, whenever practicable, be cleared for the transonic acceleration phase prior to departure.

5.3.2 During the transonic and supersonic phases of a flight, amendments to the clearance should be kept to a minimum and must take due account of the operational limitations of the aircraft in these flight phases.

6 Read-Back of Clearances

6.1 The flight crew shall read back to the air traffic controller safety-related parts of ATC clearances and instructions which are transmitted by voice. The following items shall always be read back:

a) ATC route clearances;

b) Clearances and instructions to enter, land on, take off on, hold short of, cross taxi and backtrack on any runway; and

c) Runway-in-use, altimeter settings, SSR codes, level instructions, heading and speed instructions and, whether issued by the controller or contained in automatic terminal information service (ATIS) broadcasts, transition levels.

6.2 Other clearances or instructions, including conditional clearances, shall be read back or acknowledged in a manner to clearly indicate that they have been understood and will be complied with.

6.3 The controller shall listen to the read-back to ascertain that the clearance or instruction has been correctly acknowledged by the flight crew and shall take immediate action to correct any discrepancies revealed by the read-back.

6.4 Unless specified in the SSI Manual, voice read-back of controller-pilot data link communications (CPDLC) messages shall not be required.

7 Withholding Clearance

7.1 Authorised persons are empowered to prohibit flight and they may instruct ATMSD personnel to withhold a clearance. A list of authorised persons should appear in the SSI Manual.

7.2 If a controller is instructed to withhold a take-off clearance, reasonable steps should be taken to establish the authenticity and powers of the person giving the instruction.

7.3 In addition, a controller shall withhold a take-off clearance when it is known that an aircraft has been detained.

7.4 If a controller has not been instructed to withhold clearance but has reason to believe that a planned flight is liable to endanger life or involve a breach of legislation, the controller is to:-

a) Warn the pilot of the hazardous condition, or the apparent infringement and obtain an acknowledgement of the message.

b) In the case of an infringement of legislation, warn the pilot that if he does take-off, the facts will be reported to the SACAA.

c) If the pilot still requests take-off clearance after acknowledging the warning, the pilot should be advised, when traffic permits, that there are no traffic reasons to restrict take- off.

d) Record the warning and any comment made by the pilot in the ATC occurrence log and impound the audio recording.

7.5 Whenever an aircraft has been detained, ATSU Management shall be informed immediately by the most expeditious means.

7.6 Due to possible legal action when pilots disregard the warnings described in paragraph 7.4, or when an aircraft which has been detained departs without a clearance, it is essential that clear and precise messages are passed to the pilots concerned and acknowledgements obtained.

Note: *The legislation empowering authorised persons to detain aircraft is contained in CAR Part 13.00.1(c).*

8 Priorities for the Issuance of ATC Clearances

8.1 Requests for clearances shall normally be dealt with in the order in which they are received and issued according to the traffic situation.

8.2 This order may be varied to facilitate the maximum number of flights with the least average delay. However; certain flights are given priority over others. The categorisation of these flights is given below:

a) Aircraft in emergency i.e. engine failure, fuel shortage, seriously ill person on board, ferry flights where one or more engines are inoperative and ambulance aircraft.

b) Aircraft that has declared a state of minimum fuel;

c) Normal flights which have files a flight plan i.e. scheduled services, charter, executive, private, positioning and military flights.

d) Special flights i.e. survey flights, parachute dropping etc.

e) Training flights. These flights should be accommodated into the normal traffic pattern as the opportunity occurs.

Note: *The State President and visiting Heads of State,* ***on official business*** *when so authorised, will receive priority handling.*

Section 2 Air Traffic Services

Chapter 10 Presentation and Updating of Flight Plan and Control Data

1 General

The appropriate ANSP shall establish provisions and procedures for the presentation to controllers, and subsequent updating of flight plan and control data for all flights being provided with a service by an ATSU. Provision shall also be made for the presentation of any other information required or desirable for the provisions of ATS.

2 Information and Data to Be Presented

2.1 Sufficient information and data shall be presented in such a manner as to enable the controller to have a complete representation of the current air traffic situation within the controller's area of responsibility and, when relevant, movements on the manoeuvring area of aerodromes.

2.2 The presentation shall be updated in accordance with the progress of aircraft, in order to facilitate the timely detection and resolution of conflicts as well as to facilitate and provide a record of coordination with adjacent ATS units and control sectors.

2.3 An appropriate representation of the airspace configuration, "including significant points and information related to such points, shall be provided. Data to be presented shall include relevant information from flight plans and position reports as well as clearance and coordination data.

2.4 The information display may be generated and updated automatically, or the data may be entered and updated by licensed ATMSD personnel.

2.5 Requirements regarding other information to be displayed, or to be available for display, shall be specified by the appropriate ANSP.

3 Presentation of Information and Data

3.1 The required flight plan and control data may be presented through the use of paper flight progress strips or electronic flight progress strips, by other electronic presentation forms or by a combination of presentation methods.

3.2 The method(s) of presenting information and data shall be in accordance with Human

Factors principles. All data, including data related to individual aircraft, shall be presented in a manner minimizing the potential for misinterpretation or misunderstanding.

3.3 Means and methods for manually entering data in ATC automation systems shall be in accordance with Human Factors principles.

3.4 When flight progress strips (FPS) are used, there should be at least one individual FPS for each flight. The number of FPS for individual flights shall be sufficient to meet the requirements of the ATSU concerned. Procedures for annotating data and provisions specifying the types of data to be entered on FPS, including the use of symbols, shall be specified by the appropriate ANSP.

3.5 Data generated automatically shall be presented to the controller in a timely manner. The presentation of information and data for individual flights shall continue until such time as the data is no longer required for the purpose of providing control, including conflict detection and the coordination of tights, or until terminated by the controller.

3.6 Recording and retention of data for investigative purposes Paper FPS shall be retained for a period of at least 30 days. Electronic flight progress and coordination data shall be recorded and retained for at least the same period of time.

Section 2 Air Traffic Services

Chapter 11 Position Reporting

1 Transmission of Position Reports

1.1 On routes defined by designated significant points, position reports shall be made by the aircraft when over, or as soon as possible after passing, each designated compulsory reporting point, except as provided in paragraph 1.3. Additional reports over other points may be requested by the appropriate ATSU.

1.2 On routes not defined by designated significant points, position reports shall be made by the aircraft as soon as possible after the first half hour of flight and at hourly intervals thereafter, except as provided in paragraph 1.3. Additional reports at shorter intervals of time may be requested by the appropriate ATSU.

1.3 Under conditions specified by the appropriate ANSP, flights may be exempted from the requirement to make position reports at each designated compulsory reporting point or interval. In applying this, account should be taken of the meteorological requirement for the making and reporting of routine aircraft observations.

Note: *This is intended to apply in cases where adequate flight progress data are available from other sources, e.g. ATS Surveillance, and in other circumstances where the omission of routine reports from selected flights is found to be acceptable.*

1.4 The position reports required by in paragraphs 1.1 and 1.2 shall be made to the ATSU serving the airspace in which the aircraft is operated. In addition, when prescribed in the SA-AIP or requested by the appropriate ATSU, the last position report before passing from one FIR or control area to an adjacent FIR or control area shall be made to the ATSU serving the airspace about to be entered.

1.5 If a position report is not received at the expected time, subsequent control shall not be based on the assumption that the estimated time is accurate. Immediate action shall be taken to obtain the report if it is likely to have any bearing on the control of other aircraft.

2 Contents of Voice Position Reports

2.1 The position reports required by in paragraphs 1.1 and 1.2 shall contain the following elements of information, except that elements (4), (5) and (6) may be omitted from position reports transmitted by radiotelephony:

1. Identification;
2. Position;
3. Time;
4. Flight level or altitude;
5. Next position and estimate;

6. Ensuing significant point.

2.2 Element (4), flight level or altitude, shall, however, be included in the initial call after a change of air-ground voice communication channel/ frequency.

2.3 The full AIREP (Air Report) format consists of the following:

a) Section 1 - Position Report as per paragraph

b) Section 2 - Operating Information:

7. Destination and estimated time of arrival;

8. Endurance.

c) Section 3 - Meteorological Information:

9. Air temperature;

10. Mean Wind or Spot Wind and position thereof or equivalent tail wind;

11. Turbulence;

12. Aircraft icing;

13. Supplementary.

2.4 When assigned a speed to maintain, the flight crew shall include this speed in their position reports. The assigned speed shall also be included in the initial call after a change of air-ground voice communication channel, whether or not a full position report is required.

Note: *Omission of element (4) may be possible when flight level or altitude, as appropriate, derived from* pressure altitude *information can be made continuously available to controllers in labels associated with the position indication of aircraft and when adequate procedures have been developed to guarantee the safe and efficient use of* this altitude *information.*

3 Action on Receipt of a Position Report

3.1 An ATSU receiving a report from an aircraft in flight, whether it is in the AIREP format or not, shall:

a) If it is intended for another ATSU, ensure that the unit it is intended for receives it, either by re-transmitting the message on the ATS/DS or by means of a message on the AFTN;

b) Ensure that the information received is recorded and/ or posted in accordance with the SSI Manual;

c) Pass any meteorological information included in the message promptly to the appropriate SAWS office;

c) Pass any operational information to local operator's representatives and/ or enquiry desk in accordance with the SSI Manual.

4 Radiotelephony Procedures for Air-Ground Voice Communication Channel Changeover

4.1 The initial call to an ATC unit after a change of air-ground voice communication channel shall contain the following elements:

a) Designation of station being called;

b) Call sign, and for aircraft in the heavy wake turbulence category, the word "Heavy" and for aircraft in the super heavy wake turbulence category (A380), the word "super heavy" ;

c) Level, including passing and cleared levels if not maintaining the cleared level;

d) Speed, if assigned by ATC; and

e) Additional elements, as required by ATC.

4.2 **<u>AIR-REPORT MESSAGES</u>**

The Items of an air-report shall be reported in the order in which they are listed in the model AIREP SPECIAL form.

	AIREP [SPECIAL]	
ITEM	PARAMETER	RT TRANSMISSION
	MESSAGE TYPE DESIGNATOR	[AIRREP] SPECIAL
1.	AIRCRAFT IDENTIFICATION	AIRCRAFT ID
2.	POSITION	POSITION (latitude and longitude) OVER (significant point) ABEAM (significant point) (significant point) (bearing) (distance)
3.	Time	time
4.	Level	FLIGHT LEVEL (number) or (number) METRES or FEET CLIMBING TO FLIGHT LEVEL (number) or (number) METRES or FEET DESCENDING TO FLIGHT LEVEL (number) or (number) METRES or FEET
5.	Next position and estimated time over	(position) (time)
6.	Ensuing significant point	(position)
7.	Estimated time of arrival	(aerodrome) (time)
8.	Endurance	ENDURANCE (hours and minutes)
9.	Phenomenon encountered or observed, prompting a special air-report: Moderate turbulence • Severe turbulence ▪ Moderate icing • Severe icing • Severe mountain wave • Thunderstorms without hail • Thunderstorms with hail • Heavy dust/sandstorm • Volcanic ash cloud • Pre-eruption volcanic activity or volcanic eruption • Runway breaking action encounter is not as good as reported.	TURBULENCE MODERATE TURBULENCE SEVERE ICING MODERATE ICING SEVERE MOUNTAIN WAVE SEVERE THUNDERSTORMS THUNDERSTORMS WITH HAIL DUSTSTORM or SANDSTORM HEAVY VOLCANIC ASH CLOUD PRE-ERUPTION VOLCANIC ACTIVITY or VOLCANIC ERUPTION

Air-reports are also critically important in assessing the hazards which volcanic ash cloud presents to aircraft operations. These reports will reflect post flight reporting.

<table>
<tr><td colspan="7">VOLCANIC AVTIVITY REPORT

OPERATOR: A/C IDENTIFICATION: (as indicated on flight plan)</td></tr>
<tr><td colspan="7">PILOT-IN-COMMAND:</td></tr>
<tr><td>DEP FROM:</td><td>DATE:</td><td>TIME; UTC:</td><td>ARR AT:</td><td>DATE:</td><td>TIME; UTC:</td><td></td></tr>
<tr><td colspan="7">ADDRESSEE</td></tr>
<tr><td colspan="7">Items 1–8 are to be reported immediately to the ATS unit that you are in contact with.</td></tr>
<tr><td colspan="4">1) AIRCRAFT IDENTIFICATION</td><td colspan="3">2) POSITION</td></tr>
<tr><td colspan="4">3) TIME</td><td colspan="3">4) FLIGHT LEVEL OR ALTITUDE</td></tr>
<tr><td colspan="7">5) VOLCANIC ACTIVITY OBSERVED AT
(position or bearing, estimated level of ash cloud and distance from aircraft)</td></tr>
<tr><td colspan="4">6) AIR TEMPERATURE</td><td colspan="3">7) SPOT WIND</td></tr>
</table>

Other_

8) SUPPLEMENTARY INFORMATION

SO2 detected Yes No

Ash encountered Yes No

(Brief description of activity especially vertical and lateral

extent of ash cloud and, where possible, horizontal movement, rate of growth, etc.)
After landing complete items 9–16 then fax form to: (Fax number to be provided by the meteorological authority based on local arrangements between the meteorological authority and the operator concerned.)
9) DENSITY OF ASH CLOUD (a) Wispy (b) Moderate dense (c) Very dense
10) COLOUR OF ASH CLOUD (a) White (b) Light grey (c) Dark grey (d) Black (e) Other ____________________
11) ERUPTION (a) Continuous (b) Intermittent (c) Not visible
12) POSITION OF ACTIVITY (a) Summit (b) Side (c) Single (d) Multiple (e) Not observed
13) OTHER OBSERVED (a) Lightning (b) Glow (c) Large rocks FEATURES OF ERUPTION (d) Ash fallout (e) Mushroom cloud (f) All
14) EFFECT ON AIRCRAFT (a) Communication (b) Navigation systems (c) Engines (d) Pitot static (e) Windscreen (f) Windows

15) OTHER EFFECTS (a) Turbulence (b) St. Elmo's Fire (c) Other fumes	
16) OTHER INFORMATION Note – Pre-eruption volcanic activity in this co means unusual and/or increasing volcanic acti which could presage a volcanic eruption.	

Forwarding of meteorological information

When receiving special air-reports, by voice communication air traffic services units shall forward these air- reports without delay to the associated meteorological watch offices, with the exception of conditions applying to runway breaking action encountered.

Forwarding of braking action information

When receiving special air reports by voice communications concerning braking action encountered that is not as good as that reported, air traffic services units shall forward them without delay to the appropriate aerodrome operator.

Section 2 Air Traffic Services

Chapter 12 Diversion Procedures

1 Introduction

1.1 Aircraft may divert from their planned destination to another aerodrome on the initiative of the pilot or on request from the appropriate authority on the ground. Diversions will normally be made for the following reasons:-

a) When the weather at the planned destination is reported to be below the minima prescribed by an operating company for their aircraft.

b) When obstructions on the landing area, which constitute a hazard to an aircraft landing, cannot be cleared within a reasonable period.

c) The failure of airborne equipment.

d) The failure of essential ground aids for ensuring a safe landing.

e) Unacceptable delay due to congestion of air traffic.

f) The closure of the aerodrome of destination due to aerodrome unserviceability.

2 Types of Diversion

2.1 Diversions Originated By the Pilot-In-Command of an Aircraft

2.1.1 The pilot-in-command of an aircraft is primarily responsible for safety; therefore it is the pilot-in-command who will normally decide whether or not a safe landing can be effected at a given aerodrome. The pilot-in-command will normally be aware of the weather conditions at the planned destination and alternate aerodromes, therefore whenever a diversion is necessary; the pilot-in- command will make the intention known to Air Traffic Control and request further instructions. The decision to divert will normally be in accordance with the minima prescribed by the airline or operating company.

2.2 Diversions Originated By the Ground Organisation

2.2.1 When the controller concerned, or a company's representative on the ground considers it advisable for an aircraft to divert, they will consult together and agree on the reasons for the diversion and the aerodrome to which the aircraft should be diverted. The controller will then inform the pilot-in- command of the aircraft of the situation, giving the reasons for the suggested diversion, the necessary air traffic control clearance and any further information deemed necessary for the safe conduct of the flight.

3 Choice of Diversion Aerodromes

3.1 When a diversion becomes necessary, a diversionary aerodrome shall be selected taking the following factors into consideration:-

a) Pilot's preference, normally the alternate aerodrome specified in the flight plan;

b) Suitability of the airfield for the type of aircraft being diverted;

c) Weather at alternates and en-route;

d) Aircraft's endurance in relation to distance to the alternate aerodrome;

e) Serviceability of airfield and Navaids at the alternate aerodrome;

f) Custom and Immigration arrangements where applicable;

g) Availability of suitable fuel and ground handling facilities for the type of aircraft being diverted; and

h) Availability of hotel accommodation in case of an overnight stop.

4 Detailed Diversion Procedures

4.1 The need for an aircraft to be diverted may arise either when it is under the control of an ACC or Aerodrome/Approach Control at the aerodrome of destination. Furthermore, it may be necessary to arrange a diversion to either an aerodrome within the FIR or to an aerodrome in another FIR. It is essential therefore, when marginal weather conditions exist, for controllers to maintain a close watch on the weather conditions existing and the forecast at a possible diversion aerodrome, so that they are in a position to offer assistance to pilots and company representatives should the need for a diversion arise.

4.2 When it appears to the controller that due to weather or a possible change in airfield serviceability, it may be necessary for an aircraft to divert, the following actions are to be taken:-

a) Inform the pilot of the aircraft of the possibility that it may be necessary for him to divert;

b) Consult with the SAWS regarding the actual and forecast weather at the aerodrome of intended landing and at the available alternate/ diversion aerodromes, including the weather en- route. Where available, obtain actual weather conditions from airborne aircraft in the vicinity of the route to be followed;

c) Study the latest NOTAM of serviceability of aerodrome, radio aids and other facilities from all available diversion aerodromes;

d) Inform the local company representative of the possibility of a diversion and consult as to whether there is a choice of diversion aerodromes;

e) Inform the pilot to which aerodrome the diversion will be made if it becomes necessary. In order for the pilot to plan the diversion route in advance; provide adequate information on the condition of the diversion aerodrome and its associated communications, navigation and landing aids and any other information which will be of assistance.

f) Inform the controller at the diversion aerodrome of the possibility that the aircraft may be diverted there, giving full flight plan information.

g) If the diversion aerodrome is not open or is due to close shortly, ATC must arrange for the aerodrome to re-open or to remain open as the case may be.

4.3 When the aircraft diverts, the following actions shall be taken by the controller:

a) Ensure that a Change (CHG) message has been transmitted;

b) Transmit to the aircraft the latest weather information, ATC clearance, radio frequency to be used, etc;

c) Inform the controller at the diversion aerodrome that the aircraft has been diverted;

d) Inform the company representative that the aircraft has been diverted;

e) Inform those addressees on the departure message who are still concerned with the flight that the aircraft has been diverted.

4.4 In the case of an extreme emergency it may be necessary for an aircraft to be diverted without prior consultation with the company representative on the ground. In this event, the controller will pass the following message to the pilot-in-command and inform the company representative of the action taken and the reasons as early as possible. The message shall be transmitted via R/T in the following format:-

"*REQUEST DIVERT TO...... (Aerodrome), WEATHER AT (Diversion Aerodrome)……. (Reason for diversion).. (Clearance instructions) .... ACKNOWLEDGE."*

4.5 The pilot-in-command shall acknowledge and comply with the advice given, or if unable to do so, will give the reasons for non-compliance and an alternative decision made.

Section 2 Air Traffic Services

Chapter 13 Meteorological Liaison Procedures

1 Introduction

1.1 Before the commencement of a shift and the taking-over of a control position, ATMSD personnel shall ensure that they have either studied the weather reports and forecasts supplied by SAWS, or have received a briefing by the local SAWS related to their area of responsibility and for the duration of the shift.

2 Supply of Meteorological Information

2.1 The SAWS supplies the responsible ANSP with relevant meteorological information. These meteorological observations are the official observations and as a general rule shall be the only information transmitted to aircraft. The exceptions are:

a) Indicated wind direction and speed;

b) RVR observations;

c) Sudden or unexpected deterioration of weather which, in the interests of safety, a controller considers it advisable to warn aircraft and consult with the SAWS afterwards;

d) Information from an aircraft in flight may be passed to other aircraft when a controller considers that it may be useful to them. When this is done, it shall be stated that the information originated from an aircraft in flight and the time at which the observation was made. Aircraft reports of meteorological conditions which could affect safety should always be passed on to other aircraft likely to be affected;

e) Conflicting or supplementary reports, as observed by controllers, which may affect aircraft operations, may be given to aircraft however it must be made quite clear that the reports are unofficial passed on for information purposes;

2.2 ATMSD personnel shall keep a close watch on the weather and report any sudden or unexpected deteriorations observed or obtained from pilots to the SAWS without delay. ATMSD personnel may be asked to obtain weather observations from aircraft.

2.3 Verification of Meteorological Information

2.3.1 If time allows, current weather reports should be compared with previous reports and the prevailing conditions. Differences which are difficult to reconcile with observed conditions, or barometric pressures which are not consistent with the apparent tendency should be confirmed with the SAWS before transmission to aircraft.

3 Transmission of Meteorological Information to Aircraft in Flight

3.1 General

3.1.1 All routine (METAR) and special (SPECI) reports are supplied to ATSUs in the Meteorological Aviation codes in accordance with ICAO standards.

3.1.2 Contents of meteorological reports and the order of elements in METAR and SPECI reports issued by the SAWS should contain the following information, as necessary, and normally in the following order:

a) Identification of type of information which follows;

b) Time group;

c) Identification of location;

d) Wind;

e) Visibility;

f) Runway visual range, when applicable;

g) Present weather;

h) Cloud;

i) Air temperature;

j) Dew point;

k) Pressure values;

l) Other significant information.

Note: *The names of only the elements in e, f, i, j and k should be included in the message* *using, in the case of pressure values, the appropriate Q code, either QNH or QFE. Refer to AIC 43.1*

3.1.3 Transmission of meteorological information to aircraft in flight will be done by the ATSU on a published ATC frequency on:

a) A request/ reply basis;

b) By ground initiative, by means of message directed to the aircraft concerned, in respect of SIGMET reports, SPECI and amended aerodrome forecasts;

c) ATSUs will pass the latest available weather at the destination aerodrome to all inbound aircraft when they establish contact at the FIR boundary;

d) When, in the opinion of the ATC, such reports will be useful for the safe and efficient conduct of the flight.

3.2 **Meteorological Information Request/Reply Procedures**

3.2.1 An ATSU receiving information from an aircraft for meteorological information, will request the SAWS to provide the information required, if it is not already to hand, and transmit the information to the aircraft with the minimum of delay. ATSUs should endeavour to anticipate aircraft requests for meteorological information so as to have information available when the aircraft calls.

3.2.2 The practice by flight crews to obtain weather reports via the controlling frequency should be discouraged. Flight crews should obtain pre-flight weather information from the SAWS prior to departure as part of the pre-flight briefing process, except in the case where a diversion of the flight is imminent.

3.2.3 When an aircraft departs shortly after a SIGMET, Selected Special Report or Amended Aerodrome Forecast which may affect the flight has been received by the ATSU, the ATMSD personnel shall verify as to whether or not the pilot received the report/ forecast during the pre-flight briefing. If the pilot has not already received the report/forecast the ATMSD personnel shall transmit the information on the designated frequency.

4 Automatic Terminal Information Service (ATIS) Broadcasts

4.1 Voice-ATIS Broadcast

4.1.1 Voice-ATIS shall be provided at aerodromes where it is required to reduce the communication load on ATS VHF frequencies. When provided they shall comprise:

a) One broadcast serving either arriving or departing aircraft or both, or

b) Two broadcasts serving arriving or departing aircraft respectively where the length of a single broadcast to serve both will be too long.

4.1.2 A discreet VHF frequency shall be used for voice-ATIS broadcasts. If a discrete frequency is not available, the transmission may be made on the voice channel(s) of the most appropriate terminal navigation aid(s), preferably a VOR, but not an ILS, provided the range and readability are adequate and the identification of the navigation aid is sequenced with the broadcast so that the latter is not obliterated.

4.1.3 Voice-ATIS broadcasts shall be continuous and repetitive.

4.1.4 Where the Voice-ATIS message was not prepared by the ATSU, the information contained in the message shall be made available immediately to the unit providing terminal and aerodrome services.

4.1.5 ATIS broadcasts shall be available in English; where more than one language is available each language shall be on a separate channel.

4.1.6 ATIS broadcast should ideally not exceed 30 (Thirty) seconds and care should be taken to keep the broadcast at a reasonable rate of speech.

4.1.7 Where ATIS broadcasts are available, any requests from a VOR equipped aircraft for terminal weather on VHF channels should be referred to the ATIS broadcasts in order to avoid unnecessary prolonged transmissions on VHF channels. Despite the fact that transition level and QNH is transmitted on the ATIS, this information shall again be transmitted on the approach frequency.

4.1.8 Pilots shall be informed when the runway is wet, even after light showers.

4.1.9 When rapidly changing meteorological conditions make it inadvisable to include a weather report in the ATIS, the ATIS messages shall indicate that the relevant weather information shall be given on initial contact with the appropriate ATSU.

4.1.10 If an aircraft acknowledges receipt of an ATIS that is no longer current, any element of information that needs updating shall be transmitted to such an aircraft without delay

4.2 Data link ATIS (D-ATIS) Broadcast

4.2.1 Where D-ATIS supplements voice-ATIS, the information on both systems shall be the same and updated simultaneously.

4.2.2 Where real-time meteorological information is included but the data remains within the parameters of the significant change criteria, the content, for the purpose of maintaining the same designator, shall be considered identical.

Note: *Significant change criteria are specified in ICAO Annex 3, paragraph 4.3.4.*

4.3 Criteria For Voice-ATIS And/ or D-ATIS

4.3.1 Whenever Voice-ATIS and/or D-ATIS is provided:

a) The information shall relate to a single aerodrome;

b) The information shall be updated immediately when a significant change occurs;

c) The preparation and dissemination of the ATIS message shall be the responsibility of the ATSU;

d) Individual ATIS messages shall be identified by a designator in the form of a letter of the ICAO spelling alphabet. Designators for consecutive ATIS messages shall be in alphabetical order;

e) Arriving aircraft shall acknowledge receipt of the information upon establishing communication with the ATSU providing the approach control service or the aerodrome control tower, as appropriate;

f) The appropriate ATSU shall, when replying to the message in e) above or, provide the aircraft with the current altimeter setting; and

g) The meteorological information shall be extracted from the local meteorological routine or special report.

4.3.2 ATIS for arriving and departing aircraft should be kept as brief as possible and information already included in the SA- AIP or NOTAMs should only be included in exceptional circumstances. ATIS messages shall contain the following information:

a) Name of aerodrome;

b) Arrival or departure indicator where separate arrival and departure ATIS exist;

c) Contract type, if communication is via D-ATIS;

d) Designator;

e) Time of observation, if appropriate;

f) Type of approach (es) to be expected (only for arrival ATIS);

g) The runway(s) in use; status of arresting system constituting a potential hazard, if any;

h) Significant runway surface conditions and, if appropriate, braking action;

i) Holding delay, if appropriate;

j) Transition level;

k) Other essential operational information;

l) Surface wind direction (in degrees magnetic) and speed, including significant variations and, if surface wind sensors related specifically to the sections of runway(s) in use are available and the information is required by operators, the indication of the runway and the section of the runway to which the information refers;

m) Visibility and, when applicable, RVR; and, if visibility/RVR sensors related specifically to the sections of runway(s) in use are available and the information is required by operators, the indication of the runway and the section of the runway to which the information refers;

n) Present weather;

o) Cloud below 1 500 m (5 000 ft) or below the highest minimum sector altitude, whichever is greater; cumulonimbus; if the sky is obscured, vertical visibility when available;

p) Air temperature;

q) Dew point temperature;

r) Altimeter setting(s);

s) Any available information on significant meteorological phenomena in the approach (for arrival ATIS) and climb-out areas (for departure ATIS) including wind shear, and information on recent weather of operational significance;

t) Trend forecast, when available; and

u) Specific ATIS instructions.

Note: *Items in m), n) and o) above are replaced when conditions are CAVOK.*

Section 2 Air Traffic Services

Chapter 14 Holding Aircraft in Flight

1 Introduction

1.1 In the event of extended delays, aircraft should be advised of the anticipated delay as early as possible and, when practicable, be instructed or given the option to reduce speed en route in order to absorb delay.

1.2 When delays are expected, the ACC shall normally be responsible for clearing the aircraft to the holding point, and for including holding instructions, and expected approach time or onward clearance time, as applicable, in such clearances.

2 Onward clearance time (OCT)

2.1 In the event an aircraft is held en route or at a location or aid other than the initial approach fix, the aircraft concerned shall, as soon as practicable, be given an expected onward clearance time from the holding point. The aircraft shall also be advised if further holding at subsequent holding points is expected.

Note1: *"Onward clearance time" is the time at which an aircraft can expect to leave the point at which it is being held.*

2.2 When an aircraft is to be instructed to hold en-route or at a location or aid other than the initial approach fix it shall be given an OCT to leave the holding fix. This time will be calculated on the aircraft's estimate for the en-route holding facility plus a minimum of fifteen (15) minutes when it is not possible to make an accurate calculation immediately. Once it becomes possible for ATC to work out a more accurate OCT this time shall be updated accordingly.

2.3 The OCT shall be passed to the aircraft as an actual time using the following phraseology:

'Expected onward clearance time 1233'.

2.4 Approach control shall, as far as practical, supply an area control unit with ten (10) minutes prior notification when holding is required.

3 Holding Procedures

3.1 Holding and holding pattern entry shall be accomplished in accordance with procedures established by the SA-CAA and published in the SA-AIP. If entry and holding procedures have not been published or if the procedures are not known to a flight crew, the appropriate air traffic control unit shall specify:

a) The designator of the location or aid to be used;

b) The inbound track, radial or bearing;

c) Direction of turn in the holding pattern as well as the time of the outbound leg or the distances between which to hold.

3.2 Aircraft should normally be held at a designated holding point. The required minimum vertical, lateral or longitudinal separation from other aircraft shall be provided. Criteria and procedures for the simultaneous use of adjacent holding patterns shall be prescribed in local instructions.

Note: *See Section 6, Chapter 4, Paragraph 17 "Holding Aircraft", concerning separation of aircraft holding in flight.*

3.3 Levels at holding points shall as far as practicable be assigned in a manner that will facilitate clearing each aircraft to approach in its proper priority. Normally, the first aircraft to arrive over a holding point should be at the lowest level, with following aircraft at successively higher levels.

3.4 When extended holding is anticipated, turbojet aircraft should, when practicable, be permitted to hold at higher levels in order to conserve fuel, whilst retaining their order in the approach sequence.

3.5 If an aircraft is unable to comply with the published or cleared holding procedure, alternative instructions shall be issued.

3.6 Holding at Facilities for Which Procedures Have Not Been Published

3.6.1 For the purpose of maintaining a safe and orderly flow of traffic, an aircraft may be instructed to hold at its present or at any other position, provided the required obstacle clearance is ensured.

3.6.2 When a controller requires an aircraft to hold at a holding point for which a procedure has not been published, the controller shall specify the procedure to be flown as per paragraph 3.1.

4 Expected Approach Time (EAT)

4.1 Approach control will be responsible for computing EAT where necessary for arriving aircraft within its CTR and/or TMA. Such EATs will be passed to area control for re-transmission to the aircraft as soon as practicable and preferably not later than at the commencement of its initial descent from cruising level. Whilst under approach control the aircraft shall be given updated EATs, where there is a variance of more than three (3) minutes, without delay. Area control will only be given revisions in EAT when the change is more than five (5) minutes. Approach shall compute the EAT by adding the specified approach time interval as stipulated in the SSI Manual between approaches to the last EAT allocated to an arriving aircraft. The time interval between approaches specified in the SSI Manual will allow for the first aircraft to complete its intermediate approach, procedure turn (or base turn) as specified and to have passed the holding facility on final before the next aircraft commences descent from the initial approach altitude. If the weather conditions are such that the pilot may experience difficulty in effecting a landing this time interval should be increased sufficiently to allow the first aircraft to land before the second one commences its descent from the initial approach altitude.

Note: *An EAT (or OCT) is not authority for an aircraft to commence approach (or resume its flight), hence aircraft which have been given an EAT (or OCT) must be given a clearance by ATC to commence approach (or resume its flight) at or before the time the EAT (or OCT) is reached. Only in the event of a radio failure will be pilot commence his approach (or resume his flight) at EAT (or OCT) without clearance to do so.*

4.2 The EAT shall be passed to the aircraft as an actual time using the following phraseology:

'Expected Approach Time 1018'

4.3 If for reasons other than weather, i.e. obstructions on the runway, the delay cannot be determined, no EAT is to be given. The aircraft is to be informed, '*Delay not determined'* and the reason is to be given.

5 Holding for Weather Improvement

5.1 Pilots of arriving aircraft may elect to hold for the weather to improve. In addition to passing routine weather reports, controllers are to advise pilots of other relevant meteorological information.

5.2 The first aircraft to enter the holding pattern is to be advised, 'no traffic delay expected'. No instruction to leave the holding facility shall be given until the pilot indicates his intention to attempt a landing.

5.3 Subsequent aircraft entering the holding pattern shall be advised *'Delay not determined. (Number) aircraft holding for weather improvement'.* Controllers should establish the intention of any pilot if it has not already been stated.

5.4 When a pilot wishes to make an approach, he is to be given routing instructions to enable him to descend clear of other traffic and return to the holding facility above other aircraft which have elected to make an approach. He is to be given an expected approach time relative to those aircraft and will take his place in the normal landing sequence.

5.5 If aircraft are making approaches in poor weather conditions the possibility of missed approaches shall be considered. The lowest holding level at a convenient holding facility shall normally be kept vacant for such eventualities.

6 Visual Holding Points

6.1 After coordination with the approach control unit, the ACC may clear arriving aircraft to visual holding points to hold until further advised by the approach control unit.

6.2 After coordination with the aerodrome control tower, the approach control unit may clear arriving aircraft to visual holding points to hold until further advised by the aerodrome control tower.

Section 2 Air Traffic Services

Chapter 15 VHF Direction Finding

1 Introduction

1.1 South African VDF stations normally operate independently to provide a homing service to aircraft as published in the SA-AIP. The information provided by A VDF station is an approximate bearing/heading, however a VDF is not a primary navigational aid.

1.2 The use of VDF in respect of ATS is a tool to increase situational awareness as to the location of aircraft in the vicinity of the VDF station. Information from the VDF can also be used to assist pilots who have strayed and permits ATMSD personnel to provide advice on homing towards the VDF station however this does not take the prevailing wind factors into consideration.

2 Information Provided by a VDF Station

2.1 VDF stations working independently shall provide the following information as required:

a) Magnetic bearing of the aircraft from the station, using the code QDR, or the phrase:

"*Your magnetic bearing from me is ... degrees.*"

b) Magnetic heading to steer, with no wind, to head for the VDF station, using the code QDM or the phrase,

'The suggested magnetic heading for you to steer to reach me with zero wind is ... degrees".

3 Classification of VDF Equipment

3.1 According to ICAO Doc. 9426, ATS Planning Manual, Chapter 6, *III*-1-6-1,bearings shall be classified as follows:

a) Class A - Accurate within plus minus 2 degrees;

b) Class B - Accurate within plus minus 5 degrees; or

c) Class C - Accurate within plus minus 10 degrees.

3.2 The class of the bearing shall normally be passed to the aircraft at the same time as the bearing, except that when a series of headings is being given to home the aircraft to the VDF station.

Section 2 Air Traffic Services

Chapter 16 Handover Procedure

1 Introduction

1.1 Before vacating an operating position for any reason while a unit is still in operation, ATMSD personnel vacating that position should ensure that there is a clear understanding as to who will assume responsibility for that particular operating position and an appropriate hand-over should be effected.

1.2 It is essential that all ATMSD personnel occupying an operating position are in a satisfactory state of health throughout their period of duty. Accordingly, ATMSD personnel should not assume or retain responsibility for any ATS operating position if his capacity to perform the duties of the position is in any way impaired because of sickness, injury, alcohol, drugs, fatigue, personal worry or emotional state. ATMSD personnel who consider that their physical or emotional state is such that their ability to perform duties satisfactorily may be impaired should notify ATSU management and that necessary relief arrangements are made.

2 Procedures Prior to Handover

2.1 Prior to taking over an operating position, ATMSD personnel should:

a) Ensure that they have a full understanding of the air traffic situation including an awareness of clearances issued but not yet acted upon and any developing situation requiring early attention;

b) Familiarise themselves with the serviceability of all equipment liable to be used during the duration of the shift (e.g. radar, radio, approach aids, telephone lines and aerodrome lighting);

c) Obtain all relevant information and familiarise themselves with the meteorological situation and trends for the duration of the shift and where practicable get a personal briefing from the SAWS;

d) Ensure that they are fully conversant with the latest operational instructions, notices and information, particularly with reference to the serviceability of aerodromes and other air navigation facilities;

e) Sign-on in the occurrence log at the operating position, as applicable, as having accepted responsibility for the position.

3 Procedures for Handing Over an Operational Position

3.1 ATMSD personnel handing over an operational position to another person shall ensure that the successor is provided with full information on the current traffic situation and any matters of significance which have influenced the development of the situation or which may have a bearing on the situation arising during the course of the shift.

3.2 When a prevailing traffic situation or other events makes it desirable for ATMSD personnel to complete all actions before transferring responsibility to another person, they should remain on duty until such time as these actions have been completed.

3.3 However, assembly of records or completion of reports associated with any such event should be completed after hand-over is effected but before signing off. In any case it must be ensured that responsibility for manning a position is recorded in an uninterrupted manner.

3.4 **Considerations before a Position Hand-over:**

3.4.1 A hand-over produces a workload of its own. Careful consideration to the timing should be given;

3.4.2 If it is likely that the sector will be split shortly after the hand-over consider splitting it before the hand-over;

3.4.3 Simultaneous take-over of all the sector positions (for example both radar and planner) should be avoided;

3.4.4 Do not short cut the existing good practices during low vigilance periods;

3.4.5 The handing-over controller should tidy up the working position prior to the hand-over.

3.5 **Considerations during a Position Hand-over:**

3.5.1 Avoid distracting controllers during hand-over;

3.5.2 Use checklists with the sequence of actions to be performed by both handing-over and taking-over controllers;

3.5.3 The taking-over controller should ensure that he/she has been able to assimilate all information relevant to a safe hand-over and should accept responsibility only after he/she is completely satisfied that he/she has a total awareness of the situation;

3.5.4 Use mnemonic reminders within the checklist like “check REST” before going to rest:

		Examples
R	**Restrictions**	*Flow restrictions, FUA, Danger, Prohibited and other special status airspace.*
E	**Equipment**	*Status, maintenance, ground/ ground communications, air-ground communications, navigation, surveillance, radar filters, radar source, type of surveillance sources integration if multiple, strip printers, workstations, information systems.*
S	**Situation**	*Weather (fog, snow, hail, visibility, low/high pressure, thunderstorm activity, turbulence, CAT, winds etc.), Staffing, Configurations (Sectors, Runways, Taxiways, Adjacent sectors etc.), Strips, Holding.*
T	**Traffic**	*All under control, expected, military, VIP, Aerial activity, non-compliant with ATM regulations, VFR flights, Clearances and instructions given.*

3.6 **Considerations after a Hand-over:**

3.6.1 The handing-over controller should remain available for few minutes following the handover, particularly in dynamic traffic situations, to provide clarifications/assistance regarding any points which may subsequently arise;

3.6.2 Other controllers on the sector should only impart additional information after a hand-over is complete.

Section 2 Air Traffic Services

Chapter 17 Co-ordination Procedures

1 General

1.1 The coordination and transfer of control of a flight between successive ATC units and control sectors shall be effected by a process comprising the following stages:

a) Notification of the flight in order to prepare for coordination, as necessary;

b) Coordination of conditions of transfer of control by the transferring ATC unit;

c) Coordination, if necessary, and acceptance of conditions of transfer of control by the accepting ATC unit; and

d) The transfer of control to the accepting ATC unit or control sector.

1.2 ATSUs should, to the extent possible, establish and apply standardised procedures for the coordination and transfer of control of flights, in order, *inter alia*, to reduce the need for verbal coordination. Such coordination procedures shall conform to the procedures contained in the letters of agreement and SSI Manual.

1.3 Such agreements and instructions shall cover the following as applicable:

a) Definition of areas of responsibility and common interest, airspace structure and airspace classification (s);

b) Any delegation of responsibility for the provision of ATS;

c) Procedures for the exchange of flight plan and control data, including use of automated and/or verbal coordination messages;

d) Means of communication;

e) Requirements and procedures for approval requests;

f) Significant points, levels or times for transfer of control;

g) Significant points, levels or times for transfer of communication;

h) Conditions applicable to the transfer and acceptance of control, such as specified altitudes/flight levels, specific separation minima or spacing to be established at the time of transfer, and the use of automation;

i) ATS Surveillance coordination procedures;

j) SSR Code assignment procedures;

k) Procedures for departing traffic;

l) Designated holding fixes and procedures for arriving traffic;

m) Applicable contingency procedures; and

n) Any other provisions or information relevant to the coordination and transfer of control of flights.

2 Point-out Procedure

2.1 This is an action taken by a controller to coordinate the radar identification of an aircraft with another controller, when radio communication may not be transferred.

2.2 A point-out may be used to coordinate the flight data and radio communication of an aircraft that will or may enter the area of jurisdiction of another controller and approval is sought not to transfer communication to that controller.

2.3 The requesting controller shall initiate the co-ordination by stating "*POINT-OUT REQUEST".* The requesting controller shall pass all relevant flight data to the approving controller.

2.4 The Approving controller shall ensure that the position of the aircraft corresponds with the information as passed to them. After considering the traffic situation and the need to maintain radio communication with the aircraft the approving controller shall reply:

a) "*POINT-OUT APPROVED* [*callsign*]": in which case the requesting controller may retain communication with the aircraft while the aircraft is transiting the sector of the approving controller OR

b) "*NEGATIVE POINT-OUT* [*callsign*]": in which case the aircraft shall be transferred to the approving controller at the appropriate time.

2.5 The approving controller may specify restrictions to be complied with before any changes to the aircraft's flight path, level or radar tag information is made, by the requesting controller, from that which was co-ordinated, it shall be re-coordinated with the approving controller.

2.6 Where the possibility exist that conflict may arise with other traffic, radio communication shall be transferred.

2.7 Aircraft should not be allowed to transit through or operate in a sector for an extended period of time without radio communication with the controller that has jurisdiction over the sector.

3. Coordination of activities potentially hazardous to civil aircraft

3.1 An ANSP shall ensure that a safety risk assessment is conducted, as soon as practicable, for activities potentially hazardous to civil aircraft and that appropriate risk mitigation measures are implemented.

Note — Such risk mitigation measures may include, but would not be limited to, airspace restriction or temporary withdrawal of established ATS routes or portions thereof.

3.2 An ANSP on receipt of information indicating activities potentially hazardous to civil aircraft shall:

(a) implement measures to ensure safety of aircraft potentially affected by such hazard,

(b) ensure that the operators/entities potentially affected by such hazards are informed timeously; and

(c) inform the relevant Authority of actions.

3.3 An organisation or unit conducting or identifying activities potentially hazardous to civil aircraft shall contribute to the safety risk assessment in order to facilitate consideration of all relevant safety significant factors, as per the procedures established by the Authority.

Chapter 18 Performance-Based Communications and Surveillance (PBCS)

1. Required Communications Performance (RCP) and Required Surveillance Performance (RSP) specifications

1.1 The ANSP shall ensure that the communication and surveillance capabilities of its ATM system comply with RCP 240 and RSP 180 specifications.

Section 3 Aerodrome Services

Chapter 1 Aerodrome Control

Note: *This chapter should be read in conjunction with Separation Methods and Minima (Section 6,* Chapter 5).

1 Provision of Services

1.1 An aerodrome control unit shall provide:

a) Aerodrome control service;

b) Flight Information service;

c) Alerting service; and

d) Special Events service.

1.2 An aerodrome control unit provides services principally to aircraft flying with visual reference to the surface in an aerodrome traffic zone where one is established, or, in the aerodrome traffic circuit when the aerodrome is situated within a CTR.

1.3 An aerodrome control unit is normally a separate unit but may be combined, either permanently or temporarily, with an approach control unit.

2 Responsibilities

2.1 Aerodrome control shall be responsible for issuing information and instructions to aircraft under its control to achieve a safe, orderly and expeditious flow of air traffic on and in the vicinity of an aerodrome and to assist pilots in preventing collisions between:

a) Aircraft flying in, and in the vicinity of, the aerodrome traffic zone;

b) Aircraft taking off and landing;

c) Aircraft and vehicles, obstructions and other aircraft on the manoeuvring area.

2.2 In order to execute his duties, an aerodrome controller has authority over aircraft, vehicles and personnel on the manoeuvring area.

2.3 The functions of an aerodrome control tower may be performed by different control or working positions, such as:

a) Aerodrome controller, normally responsible for operations on the runway and aircraft flying within the area of responsibility of the aerodrome control tower;

b) Ground controller, normally responsible for traffic on the manoeuvring area with the exception of runways; and

c) Clearance delivery position, normally responsible for delivery of start-up and ATC clearances to departing IFR flights.

2.4 Where parallel or near-parallel runways are used for simultaneous operations, individual aerodrome controllers should be responsible for operations on each of the runways.

2.5 As far as visibility permits, Aerodrome Controllers are required to keep a constant visual watch over the manoeuvring area and the aerodrome circuit, irrespective of whether or not IMC prevails at an aerodrome situated within a CTR, in order to:

a) Ensure that the runway-in-use and its associated taxiways and flight strips are free of obstructions, vehicles, persons and animals when required for aircraft movements;

b) Ensure that, where birds or animals are observed on or near runways, the appropriate airport authorities are informed to remove them and pilots warned of their presence;

c) Ensure that all obstructions or unserviceable areas are properly marked and pilots warned when necessary;

d) Be constantly aware of the positions of aircraft on the manoeuvring area and in the aerodrome traffic circuit so as to enable him to issue essential aerodrome traffic information;

Note: *When Approach Control is responsible for the runway-in-use, Aerodrome controllers shall maintain strict liaison with this unit in regard to the above.*

e) Alert the aerodrome safety services without delay in the event of an accident, aborted take- off or potential accident on the manoeuvring area or its environs.

2.6 **Aerodromes Situated Within a CTR**

2.6.1 During VMC conditions, aerodrome control will be responsible for the provision of aerodrome control services to aircraft on the manoeuvring area including the runway-in-use, excluding the apron, and for aircraft flying within the aerodrome circuit; and

2.6.2 During IMC conditions, aerodrome control will be responsible for aircraft on the manoeuvring area, excluding the aprons and runway-in-use, except when such responsibility has been delegated by approach control or as laid down in the ATSU SSI Manual.

2.6.3 When IMC prevails at an aerodrome situated within a control zone, the aerodrome control unit will be responsible only for items contained in paragraph 2.4 (b), (d) and (e) above, except that such responsibility does not include the runway-in-use unless such responsibility has been delegated by approach control or as stated in the ATSU SSI Manual.

2.7 Selection of Runway-in-use

2.7.1 The term 'runway-in-use' is used to indicate the particular runway or landing direction selected by aerodrome control as the most suitable at any particular time. Normally, the runway-in-use selected should be that most closely aligned to the surface wind direction. Where the surface wind conditions are light and variable the 2000 feet wind should be taken into account before selecting the runway-in-use.

2.7.2 When selecting the runway-in-use, aerodrome control shall take into consideration other factors such as:

a) Type of aircraft which will be using the aerodrome;
b) Length of runway;
c) Traffic patterns, especially where these will conflict with other aerodromes;
d) Pilot's visibility as affected by the rays of the sun or weather;
e) Prevailing weather;
f) Approach and landing aids available;
g) Noise-abatement procedures where these have been prescribed;
h) Serviceability of taxiways serving the runway-in-use;
i) Crosswind component.

Note: *At certain aerodromes more than one runway may be in use at any one time.*

Note: Refer to Section 1 Chapter 4 for crosswind component table

2.7.3 If the runway-in-use is not considered suitable for a particular operation the pilot may request permission to use another. Permission may be deferred until the traffic situation permits the use of another runway and the expected delay shall be passed to the pilot.

2.8 Alerting Service Provided by Aerodrome Control Towers

2.8.1 Aerodrome control towers are responsible for alerting the rescue and fire fighting services whenever:

a) An aircraft accident has occurred on or in the vicinity of the aerodrome; or

b) Information is received that the safety of an aircraft which is or will come under the jurisdiction of the aerodrome control tower may have or has been impaired; or

c) Requested by the flight crew; or

d) When otherwise deemed necessary or desirable.

2.8.2 Procedures concerning the alerting of the rescue and fire fighting services shall be contained in the Station Standing Instruction Manual. Such instructions shall specify the type of information to be provided to the rescue and fire fighting services, including type of aircraft and type of emergency and, when available, number of persons on board, and any dangerous goods carried on the aircraft.

2.8.3 Aircraft which fail to report after having been transferred to an aerodrome control tower, or, having once reported, cease radio contact and in either case fail to land five minutes after the expected landing time, shall be reported to the approach control unit, ACC or flight information centre, or to the rescue coordination centre in accordance with Station Standing Instructions.

2.9 Failure or irregularity of aids and equipment

2.9.1 Aerodrome control towers shall immediately report in accordance with Station Standing Instructions any failure or irregularity of operation in any equipment, light or other device established at an aerodrome for the guidance of aerodrome traffic and flight crews or required for the provision of air traffic control service.

2.10 Co-ordination

2.10.1 Aerodrome control shall co-ordinate with approach control:

a) Departing IFR flights;

b) Arriving aircraft which make their first call on the tower frequency (unless they are transferred to approach control).

2.10.2 Approach control will co-ordinate with aerodrome control:

a) Aircraft approaching to land; if necessary requesting landing clearance;

b) Arriving aircraft which are to be cleared to visual holding points;

c) Aircraft routing through the traffic circuit.

2.10.3 Aerodrome control shall co-ordinate with adjacent aerodromes to ensure that the traffic circuits do not conflict.

3 Effect of Weather on Operations

3.1 Suspension of visual flight rule operations

3.1.1 In deciding whether compliance with IFR is required, Aerodrome Control shall take into account the official weather observations.

3.1.2 An ATZ or CTR will be declared IMC when the ceiling drops below 1,500 feet and / or the visibility reduces below 5 km.

3.1.3 Approach Control shall declare a CTR IMC when any portion of the zone is IMC even though VMC may prevail at one or more of the aerodromes within the zone.

3.1.4 Approach Control shall be responsible for informing the aerodromes within the CTR and arranging liaison with them. This task may be delegated to the aerodrome controller and specified in the ATSU SSI Manual.

3.1.5 The following procedures shall be observed by the aerodrome control tower whenever VFR operations are suspended:

a) Hold all VFR departures;

b) Recall all local flights operating under VFR or obtain approval for special VFR operations;

c) Notify the approach control unit or ACC as appropriate of the action taken;

d) Notify all operators, or their designated representatives, of the reason for taking such action, if necessary or requested.

3.1.5 All aircraft not being able to comply with IFR are to be informed that IFR is in force at their destination aerodrome.

3.1.6 Pilots should be discouraged from undertaking flights to aerodromes which are IMC unless a suitable alternate is available which will enable the flight to be completed in VMC.

3.1.7 Aerodrome control shall inform approach control promptly if IMC prevails at the aerodrome at the time of opening for the day, irrespective of whether IMC or VMC prevailed at the time of closing the previous day.

3.1.8 Should an aerodrome be IMC at the time of closing for the day, a new message, either IMC or VMC, must be sent as soon as possible after opening the following day.

3.2 **Resumption of Visual Flight Rule Operations**

3.2.1 When the weather conditions have improved to the stage that compliance with IFR is no longer a requirement, aerodrome control shall inform Approach Control or the ACC.

3.2.2 The fitness state at an aerodrome should not be upgraded from IMC to VMC unless there is likely to be a lasting improvement in the weather conditions.

3.3 **Essential Information on Aerodrome Conditions**

3.3.1 Essential aerodrome information is that concerning the state of the manoeuvring area and its associated facilities which may constitute a hazard to a particular aircraft. It shall be issued to pilots in sufficient time to ensure the safe operation of aircraft. This may include the provision of urgent information to pilots during aircraft take-off and landing runs.

3.3.2 Essential information on aerodrome conditions shall include information relating to the following:-

a) Construction or maintenance work on or immediately adjacent to the manoeuvring area;

b) Rough portions of any part of the manoeuvring area, whether marked on not, e.g. broken parts of the surface of the runway and taxiways;

c) The presence of snow, slush, ice or water on the runways and taxiways, including their effect on braking action (See Section 2, paragraph 3.4);

d) Parked aircraft or other objects on or immediately adjacent to taxiways;

e) The presence of other temporary hazards, such as birds on the ground or in the air;

f) Failure or irregular operation of part or all of the aerodrome lighting system, including the approach, threshold, runway, taxiway, obstruction and manoeuvring area unserviceability lights;

g) Any other pertinent information.

Note: *Up-to date information on the conditions on aprons may not always be available to the aerodrome control tower. The responsibility of the TWR in relation to aprons is limited to the transmission to the aircraft of the information, which is provided to it by the authority responsible for the aprons.*

3.3.3 Essential information on aerodrome conditions shall be given to every aircraft, except when it is known that the aircraft has already received all or part of the information from other sources. The information shall be given in sufficient time for the aircraft to make use of it, and the hazard shall be identified as distinctly as possible.

Note: *The term "Other sources" includes NOTAM, ATIS broadcasts and the display of suitable signals or messages.*

3.3.4 When a not previously notified condition pertaining to the safe use by aircraft of the manoeuvring area is reported to or observed by the controller, the appropriate aerodrome authority shall be informed and operations on that part of the manoeuvring area be terminated until otherwise advised by the appropriate aerodrome authority.

3.4 Braking Action Characteristics of Wet Paved Surfaces.

3.4.1 There is an operational requirement to establish friction characteristic information on paved runways which may become slippery when wet causing significant deterioration of both aircraft braking performance and directional control. To ensure that this information is readily available for flight deck crews, there is a requirement to measure periodically the depth of standing water on paved runway surfaces which may affect the braking action of aircraft.

3.4.2 Under certain conditions wet runways may display friction levels worse than those defined by the SACAA. These conditions are known to occur at certain locations when the initial rainfall on a runway, following a prolonged dry spell, results in a very slippery condition which is unrepresentative of the overall wet friction characteristics of the runway. This situation is a temporary one which remedies itself as further rainfall washes the runway's surface.

Note: *This may be caused by the emulsification of dirt and other deposits which are precipitated onto the runway. In humid climates microscopic fungoid growths are believed to be responsible.*

3.4.3 To be able to report with some accuracy on the conditions of the runway the following terms and associated descriptions should be used:

a) - Damp — The surface shows a change of colour due to moisture.

b) - Wet — The surface is soaked but there is no standing water.

c) - Water patches — Significant patches of standing water are visible.

d) - Flooded — Extensive standing water is visible.

3.4.4 The aerodrome controller shall on receipt of this information transmit to any aircraft attempting to land or take-off in order for the flight crew to determine as to whether the conditions permit a safe operation.

3.5 Runway Visual Range (RVR)

3.5.1 Observing Techniques

3.5.1.1 There are two observing techniques currently recognised. In this context, “observing” implies instrumented measurements or visual observations of physical parameters i.e. transmittance, number of runway edge lights etc. on which an assessment of RVR can be based. The following are the two recognised techniques:

a) Instrumented Technique

In this case the use of a transmissometer to measure the transmittance of the atmosphere or a forward-scatter meter to measure the atmospheric extinction coefficient which is then displayed in the tower giving digital read-outs of RVR in meters.

Note: *The instrumented technique shall comply with the requirements of observing and reporting as specified in Annex 3 and ICAO Manual of Runway Visual Range Observing and Reporting Practices (Doc 9328).*

b) Human Observer Technique

An observer counts the number of runway lights visible from an observing position near the runway. This number is converted to runway visual range, making due allowances for the differences in light intensity, background etc.

Note: *Observations using the Human Observer technique shall be made out in paragraph 3.5.2 to 3.5.17.*

3.5.2 All weather operations require the provision of RVR. The instrumented technique is the preferred method for CAT I operations, however the human observer technique is acceptable. For CAT II and III operations the instrumented technique is mandatory. The instrumented technique is the preferred method for low visibility take-offs, however the human observer technique is acceptable in conditions better than 150m RVR.

3.5.3 RVR will only be measured at controlled aerodromes and only on instrument runways with electric runway lighting and shall be measured for each runway that is used. RVR must be measured continuously at all operationally significant times while the official Met visibility is reported as less than 1500m.

Note: *During operationally significant times the RVR must be measured even though RVR readings in excess of 1500m are obtained as long as the official Met visibility is less than 1500m.*

3.5.4 For the purpose of the RVR procedures, operationally significant times shall be interpreted as:

a) i.r.o. arriving aircraft, from 10 minutes before ETA, or earlier on request, until the aircraft has landed or diverted; and

b) i.r.o. departing aircraft; from 10 minutes before ETD, or earlier on request, until 10 minutes after take-off; however, if there is a probability of the aircraft returning to the point of departure, RVR will be measured until the aircraft has landed or the probability of return no longer exists.

Note: *In order to effect flexibility, each ATSU shall publish in its SSI Manual the times and positions on the runways from which sightings must be made.*

3.5.5 The Met Office shall inform ATC when the visibility falls below 1500m. Should this report from Met be received during a significant operational time ATC shall request Met to measure the RVR.

3.5.6 ATC shall inform Met of the first RVR measurement of the day so that the information can be include in the Met reports. Thereafter Met shall inform ATC when they require further RVR measurements for inclusion in Met reports.

Note: *RVR values up to 400m shall be reported in increments of 25m, values between 400m and 800m in increments of 50m, and values between above 800m and 2000m in increments of 100m. RVR values between 1500m and 2000m shall only be reported if the visibility is less than 1500m.*

3.5.7 ATC must inform Met when RVR observation is to be discontinued because aircraft operations have reached a stage which is no longer operationally significant.

3.5.8 Any human observer performing RVR observations shall have received training for the task and must be given experience in performing the task in VMC conditions. Such personnel shall be certified and the records kept.

3.5.9 Vehicles used for RVR observations shall maintain two-way radio communication with the Aerodrome Control Tower throughout the period of the observations and shall be driven by someone that is qualified by the Aerodrome LVO requirements to do so under LVO.

3.5.10 Human Observers should meet required vision standard and be subject to periodic vision checks.

3.5.11 Where continuous observations are required a observation position that complies with the obstacle clearance criteria should be specified from where observations are made while the runway is in use.

3.5.12 Observations made with the Human Observation Technique should be made as close as practicable from a height of approximately 5m above the ground.

3.5.13 The procedure to be followed by the person taking the RVR observations will be:

a) Enter the runway at the upwind end and proceed down the length of the runway in the opposite direction to the intended landing or take-off direction ensuring that the runway is clear of obstructions, vehicles and work-parties. Any obstructions observed to be reported to TWR on R/T immediately.

b) On reaching the threshold, inform the TWR and take up position at the centre-line of the runway and approximately 300 metres in from the threshold if possible.

c) Looking down the runway ask the TWR to vary the light intensity so that the runway lights can be seen as individual light sources without glare.

d) Count the number of lights visible on one side of the runway and pass this number to the TWR on the R/T.

e) Remain in that position looking down the runway and inform the TWR of any change in the visibility equal to one light less or one light more visible.

f) The Aerodrome controller must ensure that when a departing aircraft starts taxiing out for take-off and when an arriving aircraft reports turning final approach the vehicle is moved off the runway for a distance of at least 150 metres. TWR must be informed as soon as the vehicle is clear of the runway. Care must be taken to ensure that the vehicle does not obstruct a taxiway which aircraft will be using.

g) The Aerodrome controller will inform the RVR observer when he may re-enter the runway to resume observations.

h) The Aerodrome controller will inform the RVR observer when RVR observations are to be discontinued.

3.5.14 It is the Aerodrome controller's responsibility to make the conversion from the number of lights visible to RVR in metres. The RVR is obtained by multiplying the number of runway lights visible by the spacing between the lights. A table indicating the exact distance of each light from the threshold shall be published in the unit SSI for quick reference.

3.5.15 The RVR must be included in all weather reports while the visibility is below 1500m and passed to arriving aircraft and to aircraft starting up or taxiing out. Any later changes to the RVR must be passed to such aircraft as soon as they are observed.

3.5.16 The runway lights should be left on the same intensity for aircraft operations as that used for the measuring of the RVR, unless a pilot request for it to be changed.

3.5.17 Should radio communication with the observer be lost, the runway lights should be switched off and on again and stepped up to the original intensity to indicate to the observers to vacate the runway and to contact the Tower immediately. The runway may not be used until it is established that the observers are clear of the runway.

3.6 Low Visibility Operations (LVO)

3.6.1 General

Low Visibility Operations has two main objectives which are to protect the ILS signals from interference and to protect aircraft and vehicle traffic from collision.
LVO are required not only for CAT II/III operations but for all aerodromes where operations, including departures, take place under reduced visibility.

The nature and complexity of all operations at an airport requires that all agencies at the airport are involved in LVO.

3.6.2 Surface Movement Guidance Control System (SMGCS)

3.6.2.1 The day-to-day ATC operations on the movement area requires the operation of an SMGCS to provide guidance and control to all aircraft, vehicles and personnel to prevent collisions and support a safe, expeditious and efficient flow of traffic on the aerodrome.

Note: *Guidance refers to the facilities, information, advice and visual and non-visual aids used. Control refers to the regulation, procedures and measures used. SMGCS will vary from simple systems at a quiet VFR aerodrome to complex systems at large busy aerodromes.*

3.6.2.2 LVO should form part of this broader strategy and tactical operations of the SMGCS, however the complexity of operations in low visibility requires specific procedures and an adaptation of existing procedures may not be adequate.

3.6.2.3 For the purpose of designing a SMGCS the following visibility conditions are defined by ICAO and shall be used for determining LVP:

Visibility Conditions		
Visibility Condition 1	-	Visibility is sufficient for the pilot to taxi and to avoid collision with other traffic on taxiways and at intersections by visual reference, and for ATMSD personnel of control units to exercise control over all traffic on the basis of visual surveillance.
Visibility Condition 2	-	Visibility sufficient for the pilot to taxi and to avoid collision with other traffic on taxiways and at all intersections by visual reference, but insufficient for ATMSD personnel of control units to exercise control over all the traffic on the basis of visual surveillance.
Visibility Condition 3	-	Visibility less than 400m RVR (Low Visibility Operations)

a) Division of responsibility between controller and pilot. Prevention of collision is a joint pilot/ ATS responsibility with the controller always responsible for the resolution of intersection conflicts. In the lower visibilities, the over-all responsibility for the avoidance of collision becomes increasingly that of the ATSU.

b) As visual surveillance of the aerodrome is progressively lost the workload of ATC and pilots will increase while the traffic demand may not reduce. ATC becomes more and more reliant on RTF to obtain information that can no longer be acquired visually. It may become necessary to restrict vehicle movements while under “Visibility Condition 2”.

c) Under “Visibility Condition 3” neither ATC nor flight deck crew can provide separation based on visual observation and complete reliance for separation falls on the operation of the SMGCS. Specific techniques for longitudinal spacing should be used. The traffic capacity will depend on the SMGCS components and segments.

3.6.3 Control of aerodrome surface traffic in conditions of low visibility

Note: *These procedures apply whenever conditions are such that all or part of the manoeuvring area cannot be visually monitored from the control tower. Additional requirements which apply when category II/III approaches are being conducted are specified in paragraph 3.6.4.*

3.6.3.1 When there is a requirement for traffic to operate on the manoeuvring area in conditions of visibility which prevent the aerodrome control tower from applying visual separation between aircraft, and between aircraft and vehicles, the following shall apply:

a) Restrict vehicle movements in conditions of low visibility:

i) Recall of non-essential vehicles from the manoevering area;

ii) Two-way radio communication shall be maintained with all parties allowed onto the manoevering area;

iii) The aerodrome control tower shall, prior to a period of application of low visibility procedures, establish a record of vehicles and persons currently on the manoeuvring area and maintain this record during the period of application of these procedures to assist in assuring the safety of operations on that area.

b) At the intersection of taxiways, an aircraft or vehicle on a taxiway shall not be permitted to hold closer to the other taxiway than the holding position limit defined by a clearance bar, stop bar or taxiway intersection marking according to the specifications in Annex 14, Volume I, Chapter 5.

c) The longitudinal separation on taxiways shall be as specified for each particular aerodrome by the appropriate ATS authority. This separation shall take into account the characteristics of the aids available for surveillance and control of ground traffic, the complexity of the aerodrome layout and the characteristics of the aircraft using the aerodrome.

Note: *The* Manual of Surface Movement Guidance and Control Systems (SMGCS) *(Doc 9476) provides guidance on surface movement guidance and control components and procedures for low visibility operations.*

d) Protection of the ILS signals which includes:

i) Localiser Critical Area (LCA) when minima is below 800ft cloud base or 3000m visibility;

ii) Localiser Sensitive Area (LSA) when minima is below 200ft cloud base or 600m RVR;

iii) Departing traffic must have overflown the localiser before arriving traffic has descended below 200ft;

iv) Arriving traffic must be clear of the LSA before arriving traffic has descended below 200ft;

v) Protection of LSA until departing traffic has crossed the localiser;

vi) During simulated low-minima operations the above requirements should be adhered to as far as reasonably possible. For any of the above requirements that cannot be complied with, the controller shall advise the flight deck crew accordingly.

e) Special emergency procedures to be applied under LVO;

f) Procedures for the use of “Stop Bar” lights;

g) Simplification of taxi routes to be used in LVO that is published as a standard;

h) Notification of operators, agencies and relevant ATSUs, including operators on the airport that have their own access to aprons;

i) Observing and the reporting of RVR according to Doc 9328.

3.6.4 Procedures for control of aerodrome traffic when category II/III approaches are in use

3.6.4.1 The ANSP shall establish provisions applicable to the start and continuation of precision approach category II/III operations as well as departure operations in RVR conditions less than a value of 550 m.

3.6.4.2 Low visibility operations shall be initiated by or through the aerodrome control tower.

3.6.4.3 The aerodrome control tower shall inform the approach control unit concerned when procedures for precision approach category II/III and low visibility operations will be applied and also when such procedures are no longer in force.

3.6.4.4 Provisions regarding low visibility operations should specify:

a) The RVR value(s) at which the low visibility operations procedures shall be implemented;

b) The minimum ILS equipment requirements for category II/III operations;

c) Other facilities and aids required for category II/III operations, including aeronautical ground lights, which shall be monitored for normal operation;

d) The criteria for and the circumstances under which downgrading of the ILS equipment from category II/III operations capability shall be made;

e) The requirement to report any relevant equipment failure and degradation, without delay, to the flight crews concerned, the approach control unit, and any other appropriate organization;

f) Special procedures for the control of traffic on the manoeuvring area, including;

   I) The runway-holding positions to be used;

   II) The minimum distance between an arriving and a departing aircraft to ensure protection of the sensitive and critical areas;

   III) Procedures to verify that aircraft and vehicles have vacated the runway;

   IV) Procedures applicable to the separation of aircraft and vehicles;

g) Applicable spacing between successive approaching aircraft;

h) Action(s) to be taken in the event low visibility operations need to be discontinued, e.g. due to equipment failures; and

i) Any other relevant procedures or requirements.

Note: *Further information regarding the requirements for low visibility operations can be found in the* Air Traffic Services Planning Manual *(Doc 9426) and the All Weather Operations Manual (Doc 9365).*

4 Control of Surface Traffic

4.1 Control of Other Than Aircraft Traffic

4.1.1 Entry to The Manoeuvring Area

The movement of pedestrians or vehicles on the manoeuvring area shall be subject to authorization by the aerodrome control tower. Persons, including drivers of all vehicles, shall be required to obtain authorization from the aerodrome control tower before entry to the manoeuvring area. Notwithstanding such an authorization, entry to a runway or runway strip or change in the operation authorized shall be subject to a further specific authorization by the aerodrome control tower.

4.1.2 Priority on The Manoeuvring Area

4.1.2.1 All vehicles and pedestrians shall give way to aircraft which are landing, taxiing or taking off, except that emergency vehicles proceeding to the assistance of an aircraft in distress shall be afforded priority over all other surface movement traffic. In the latter case, all movement of surface traffic should, to the extent practicable, be halted until it is determined that the progress of the emergency vehicles will not be impeded.

4.1.2.2 When an aircraft is landing or taking off, vehicles shall not be permitted to hold closer to the runway-in-use than:

a) At a taxiway/runway intersection — at a runway holding position; and

b) At a location other than a taxiway/runway intersection — at a distance equal to the separation distance of the runway-holding position.

4.1.3 **Communication Requirements**

At controlled aerodromes all vehicles employed on the manoeuvring area shall be capable of maintaining two-way radio communication with the aerodrome control tower, except when the vehicle is only occasionally used on the manoeuvring area and is:

a) Accompanied by a vehicle with the required communications capability, or

b) Employed in accordance with a pre-arranged plan established with the aerodrome control tower.

Note: *When employed in accordance with a plan pre-arranged with the aerodrome control tower, construction and maintenance personnel should not normally be required to be capable of maintaining two-way radio communication with the aerodrome control tower.*

4.1.4 **Crossing Runways**

4.1.4.1 If the instructions given to surface traffic involve crossing a runway in use, clearance to cross should normally be withheld until no confliction exists. However, to achieve greater efficiency of operation clearance to cross may be given subject to aircraft which are landing or taking off. The clearance shall contain sufficient information to enable the pilot of the taxiing aircraft or vehicle driver to identify the other traffic and should be related to one movement only.

4.1.4.2 When a clearance to cross a runway in-use is issued, a report vacated instruction shall be included. However, this instruction may be omitted when aerodrome control has continuous sight of the aircraft or vehicle crossing.

4.1.5 **Runway Occupancy**

4.1.5.1 When aircraft, persons or vehicles have been given permission to cross or occupy a runway in use, the controller shall, as a positive reminder that the runway is blocked, display a strip(s) or marker(s) on the part of the flight progress board which is used to represent the runway.

4.1.5.2 At units where flight progress boards are not used, such runway occupancy is to be shown effectively by a suitable method similar to the above.

4.1.6 **Taxying on a Runway-In-Use**

4.1.6.1 For the purpose of expediting air traffic, aircraft may be permitted to taxi on the runway-in-use, provided no delay or risk to other aircraft will result. Where control of taxying aircraft is provided by a ground controller and the control of runway operations by an aerodrome controller, the use of a runway by taxiing aircraft shall be coordinated with and approved by the aerodrome controller. Communication with the aircraft concerned should be transferred from the ground controller to the aerodrome controller prior to the aircraft entering the runway.

Note: *In the interests of safety, use of the active runway for taxying purposes should be kept to a minimum.*

4.1.6.2 If the control tower is unable to determine, either visually or via an ATS surveillance system, that a vacating or crossing aircraft has cleared the runway, the aircraft shall be requested to report when it has vacated the runway. The report shall be made when the entire aircraft is beyond the relevant runway-holding position.

4.1.4 **Runway Incursion or Obstructed Runway**

4.1.4.1 In the event the aerodrome controller, after a take-off clearance or a landing clearance has been issued, becomes aware of a runway incursion or the imminent occurrence thereof, or the existence of any obstruction on or in close proximity to the runway likely to impair the safety of an aircraft taking off or landing, appropriate action shall be taken as follows:

a) Cancel the take-off clearance for a departing aircraft;

b) Instruct a landing aircraft to execute a go-around or missed approach;

c) In all cases inform the aircraft of the runway incursion or obstruction and its location in relation to the runway.

Note: *Animals and flocks of birds may constitute an obstruction with regard to runway operations. In addition, an aborted take-off or a go-around executed after touchdown may expose the aeroplane to the risk of overrunning the runway. Moreover, a low altitude missed approach may expose the aeroplane to the risk of a tail strike. Pilots may, therefore, have to exercise their judgement in* *accordance with Annex 2, 2.4 concerning the authority of the pilot-in-command of an aircraft.*

4.1.4.2 Pilots and air traffic controllers shall report any occurrence involving an obstruction on the runway or a runway incursion.

Note 1._ Information regarding runway incursion and reporting forms together with instructions for their completion are contained in the Manual on the Prevention of Runway Incursions (Doc 9870). Attention is drawn to the guidance for analysis, data collection and sharing of data related to runway incursions (see Chapter 5 of Doc 9870).

Note 2._ The provisions in 7.4.1.4.2 have the objective of supporting the State's safety programme and safety management system (SMS).

4.2 **Control of Taxiing Aircraft**

4.2.1 When the pilot of an aircraft requests start-up or taxi clearance the following information shall be given:

a) Runway in use;

b) Surface wind direction and speed, including significant variations;

c) Aerodrome QNH;

d) Outside air temperature (turbine-engine aircraft only);

e) Significant meteorological conditions (e.g. RVR, marked temperature inversion);

f) The correct time.

4.2.2 Those items which are known to have been received by the pilot may be omitted.

4.2.3 Prior to issuing a taxi clearance, the controller shall determine where the aircraft concerned is parked. Taxi clearances shall contain concise instructions and adequate information so as to assist the flight crew to follow the correct taxi routes, to avoid collision with other aircraft or objects and to minimize the potential for the aircraft inadvertently entering an active runway.

4.2.4 Aerodrome control responsibility on the apron is limited to providing advice and instructions to assist the prevention of collisions between moving aircraft. The apron may be out of sight from some visual control rooms and in these circumstances any of the following procedures, adapted if necessary to suit local conditions may be used to control moving aircraft:

a) An aircraft is cleared to taxi. A second aircraft may be given taxi clearance plus information on the position and intention of the first aircraft, with a clear instruction to 'follow' or 'give way' to it;

b) An aircraft is cleared to taxi and all further requests for aircraft movement are refused until the first aircraft comes into sight of the controller. A second movement is then approved following the same procedures;

c) An aircraft is cleared to taxi and asked to report when clear of the apron or passing an easily identifiable reference point. A second movement may then be cleared subject to the known progress of the first.

4.2.5 When a taxi clearance contains a taxi limit beyond a runway, it shall contain an explicit clearance to cross or an instruction to hold short of that runway.

4.2.6 The appropriate ATS authority should whenever practicable publish in the national AIP standard taxi routes to be used at an aerodrome. Standard taxi routes should be identified by appropriate designators and should be used in taxi clearances.

4.2.7 Where standard taxi routes have not been published, a taxi route should, whenever possible, be described by use of taxiway and runway designators. Other relevant information, such as an aircraft to follow or give way to, shall also be provided to a taxiing aircraft.

4.3 Taxi Clearance

4.3.1 The importance of issuing clear and concise instructions to taxying aircraft cannot be over-emphasised. The visibility from an aircraft flight deck is limited and, when taxying, the pilot is dependent to a large degree upon aerodrome control to assist him in determining the correct taxi route to be followed. Essential aerodrome information is to be passed to the pilot to assist him in preventing collisions with parked aircraft and obstructions on or near the manoeuvring area.

4.3.2 Heavy aircraft are not to be given clearance or instructions that would require the use of more than normal power for taxying or for entry on to the runway. Controllers should not clear an aircraft for an immediate take-off unless the pilot has indicated that he is able to do so.

Note: Controllers should take cognisance that when clearing an aircraft for an immediate take- off that certain aircraft may be slow in performing this requirement.

4.3.3 At aerodromes where taxiway stop-bars are used to protect taxiway routes and runways from inadvertent incursions controllers are not to clear aircraft to cross an illuminated stop-bar. The inoperable taxiway stop-bar and its associated taxiway should be withdrawn from service and an alternative routing used. On the occasions when this is not possible an aircraft may be cleared to cross such an illuminated taxiway stop-bar subject to the following conditions:

a) The stop-bar cannot be suppressed.

b) The stop-bar and aircraft affected are visible to the aerodrome controller.

c) The phraseology used is to leave the pilot in no doubt that the clearance applies only to the faulty stop-bar.

d) In the case of illuminated stop-bars protecting the runway aircraft may not be cleared to cross without the assistance of an aerodrome operations vehicle.

***Note*:** *The requirement at b) above may be satisfied by the use of an SMR which has been approved by the CAA for this purpose.*

4.3.4 Uncertainty of Position on the Manoeuvring Area

4.3.4.1 Except as provided for in paragraph 4.3.4.2 below, a pilot in doubt as to the position of the aircraft with respect to the manoeuvring area shall immediately:

a) Stop the aircraft; and

b) Simultaneously notify the appropriate ATS unit of the circumstances (including the last known position).

4.3.4.2 In those situations where a pilot is in doubt as to the position of the aircraft with respect to the manoeuvring area, but recognizes that the aircraft is on a runway, the pilot shall immediately:

a) Notify the appropriate ATS unit of the circumstances (including the last known position);

b) If able to locate a nearby suitable taxiway, vacate the runway as expeditiously as possible, unless otherwise instructed by the ATS unit; and then,

c) Stop the aircraft.

4.3.4.3 A vehicle driver in doubt as to the position of the vehicle with respect to the manoeuvring area shall immediately:

a) Notify the appropriate ATS unit of the circumstances (including the last known position);

b) Simultaneously, unless otherwise instructed by the ATS unit, vacate the landing area, taxiway, or other part of the manoeuvring area, to a safe distance as expeditiously as possible; and then,

c) Stop the vehicle.

4.3.4.4 In the event the aerodrome controller becomes aware of an aircraft or vehicle that is lost or uncertain of its position on the manoeuvring area, appropriate action shall be taken immediately to safeguard operations and assist the aircraft or vehicle concerned to determine its position.

4.4 **Taxi Clearance Limit**

4.4.1 In addition to providing instructions about the route to be followed, all taxi clearances are to contain a specific clearance limit. This clearance limit should be a location on the manoeuvring area or apron.

4.4.2 Care must be exercised when clearing an aircraft to the holding point of the runway in-use, for the aircraft is then permitted to cross all runways which intersect the taxi route designated in the clearance whether active or not. Therefore when a taxi clearance contains a taxi limit beyond a runway, it is to contain an explicit clearance to cross that runway. If such a clearance cannot be given, the clearance limit and the specified route must exclude that runway and any route beyond it. When the controller considers it appropriate, the phrase 'hold short' may be used to emphasise that the aircraft is not authorised to cross an intermediate runway.

4.5 **Helicopter Taxying Operations**

4.5.1 When necessary for a wheeled helicopter or vertical take-off and landing (VTOL) aircraft to taxi on the surface, the following provisions are applicable.

Note: *Ground taxiing uses less fuel than air-taxiing and minimizes air turbulence. However, under certain conditions, such as rough, soft or uneven terrain, it may become necessary to air-taxi for safety considerations. Helicopters with articulating rotors (usually designs with three or more main rotor blades) are subject to "ground resonance" and may, on rare occasions, suddenly lift off the ground to avoid severe damage or destruction.*

4.5.2 When it is requested or necessary for a helicopter to proceed at a slow speed above the surface, normally below 20 kts and in ground effect, air taxying may be authorized.

Note: *Air-taxiing consumes fuel at a high burn rate, and helicopter downwash turbulence (produced in ground effect) increases significantly with larger and heavier helicopters.*

4.5.3 Instructions which require small aircraft or helicopters to taxi in close proximity to taxiing helicopters should be avoided and consideration should be given to the effect of turbulence from taxying helicopters on arriving and departing light aircraft.

4.5.4 A frequency change should not be issued to single-pilot helicopters hovering or air-taxying. Whenever possible, control instructions from the next ATS unit should be relayed as necessary until the pilot is able to change frequency.

Note: *Most light helicopters are flown by one pilot and require the constant use of both hands and feet to maintain control during low-altitude/low-level flight. Although flight control friction devices assist the pilot, changing frequency near the ground could result in inadvertent ground contact and consequent loss of control.*

4.6 **Jet Blast Hazards**

4.6.1 In issuing clearances or instructions, air traffic controllers should take into account the hazards caused by jet blast and propeller slipstream to taxiing aircraft, to aircraft taking off or landing, particularly when intersecting runways are being used, and to vehicles and personnel operating on the aerodrome.

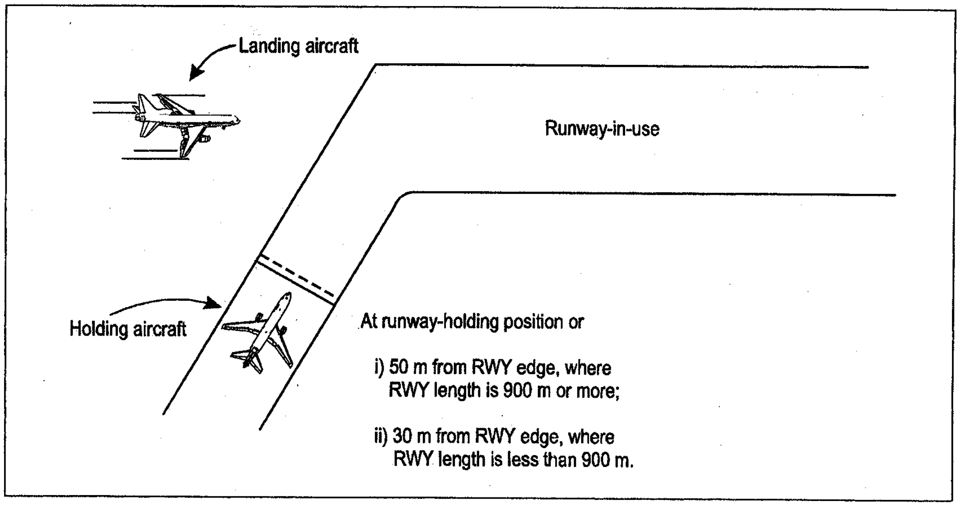
Note: *Jet blast and propeller slipstream can produce localized wind velocities of sufficient strength to cause damage to other aircraft, vehicles and personnel operating within the affected area.*

4.7 **Use of Runway-Holding Positions**

4.7.1 Except as provided in paragraph 4.5.2 or as prescribed by the appropriate ATS authority, aircraft shall not be held closer to a runway-in-use than at a runway-holding position.

Note: *Runway-holding position locations in relation to runways are specified in Annex 14, Volume I, Chapter 5.*

4.7.2 Aircraft shall not be permitted to line up and hold on the approach end of a runway-in-use whenever another aircraft is effecting a landing until the landing aircraft has passed the point of intended holding.



5 Control of Departing Traffic

5.1 Departure sequence

Note: *Refer to Section **6**, Chapter **5** for aerodrome separations.*

5.1.1 Departures shall normally be cleared in the order in which they are ready for take-off, except that deviations may be made from this order of priority to facilitate the maximum number of departures with the least average delay. Factors which should be considered in relation to the departure sequence include, *inter alia*:

a) Types of aircraft and their relative performance;

b) Routes to be followed after take-off;

c) Any specified minimum departure interval between take-offs;

d) Need to apply wake turbulence separation minima;

e) Aircraft which should be afforded priority; and

f) Aircraft subject to ATFM requirements.

Note: *For aircraft subject to ATFM requirements, it is the responsibility of the pilot and the operator to ensure that the aircraft is ready to taxi in time to meet any required departure time, bearing in mind that once a departure sequence is established on the taxiway system, it can be difficult, and sometimes* *impossible, to change the order.*

5.1.2 Aircraft shall not be permitted to line up and wait on the approach end of the runway-in-use whenever another aircraft is affecting a landing or has been cleared for an overshoot below 400 feet, until landing or overshooting aircraft has passed the point of intended holding.

5.1.3 An aircraft landing or in the final stages of an approach to land shall normally have priority over an aircraft intending to depart.

5.1.4 An aerodrome controller may, after co-ordination with Approach Control expedite departing traffic by suggesting a take-off direction which is not into wind but the pilot has the right to reject the suggestion.

5.2 **Take-off Clearance**

5.2.1 Take-off clearance may be issued to an aircraft when there is reasonable assurance that the separation in Section 6, Chapter 5, Paragraph ***2*** has been complied with and will exist when the aircraft commences take-off.

5.2.2 When an ATC clearance is required prior to takeoff, the take-off clearance shall not be issued until the ATC clearance has been transmitted to and acknowledged by the aircraft concerned. The ATC clearance shall be forwarded to the aerodrome control tower with the least possible delay after receipt of a request made by the tower or prior to such request if practicable.

5.2.3 Subject to 5.2.2, the take-off clearance shall be issued when the aircraft is ready for take-off and at or approaching the departure runway and the traffic situation permits. To reduce the potential for misunderstanding, the take-off clearance shall include the designator of the departure runway.

5.2.4 In the interest of expediting traffic, a clearance for immediate take-off may be issued to an aircraft before it enters the runway. On acceptance of such clearance the aircraft shall taxi out to the runway and take off in one continuous movement, except in the case of a “Heavy aircraft”.

5.2.5 When given the instruction 'cleared for immediate take-off ' it is expected that the pilot will act as follows:

a) At the holding point, taxi immediately on to the runway and commence take-off without stopping the aircraft. (Not to be given to Heavy aircraft);

b) If already lined up on the runway, take-off without delay.

5.2.6 Prior to take-off aircraft shall be advised of:

a) Any significant changes in the surface wind direction and speed including the cross-wind component where required, the air temperature, and the visibility or RVR value(s) given in accordance with paragraph 4.2.1;

b) Significant meteorological conditions in the take-off and climb-out area, except when it is known that the information has already been received by the aircraft.

Note 1: *See Section 1, Chapter 4 for the Cross-wind Component Table.*

Note 2: *Significant meteorological conditions in this context include the occurrence or expected occurrence of cumulonimbus or thunderstorm, moderate or severe turbulence, wind shear, hail, moderate or severe icing, severe squall line, freezing precipitation, severe mountain waves, sand storm, dust storm, blowing snow, tornado or waterspout in the take-off and climb-out area.*

5.3 Cancelling Take-off Clearance

5.3.1 If, for any reason, take-off clearance has to be cancelled before the take-off run has commenced, the pilot shall be instructed to hold position and to acknowledge the instruction. If the aerodrome controller considers that it is necessary to cancel takeoff clearance after the aircraft has commenced the take-off run, the pilot shall be instructed to stop immediately and to acknowledge the instruction.

5.3.2 The cancellation of a take-off clearance after an aircraft has commenced its take-off roll should only occur when the aircraft will be in serious and imminent danger should it continue. Controllers should be aware of the potential for an aircraft to overrun the end of the runway if the take-off is abandoned, particularly in the case of a large aircraft or when the runway braking may be adversely affected. Because of this risk, even if a take-off clearance is cancelled, the commander of the aircraft may consider it safer to continue the take-off than to attempt to stop the aircraft.

5.3.3 Controllers should also be aware of the possibility that an aircraft that abandons its take-off may suffer overheated brakes or other abnormal situation and should be prepared to declare the appropriate category of emergency or to provide other suitable assistance.

6 Control of Arriving Aircraft

6.1 Joining the Circuit

6.1.1 Clearance to enter a traffic circuit is issued when an aircraft is still some distance from the airfield to enable the pilot to conform with the traffic circuit, pending clearance to land. Information concerning landing direction or runway in use and any other necessary instructions are given at the same time so that the pilot may intelligently position himself in the traffic pattern.

6.1.2 Prior to entering the traffic circuit or commencing its approach to land, an aircraft shall be provided with the following elements of information, in the order listed, with the exception of such elements which it is known the aircraft has already received:

a) The runway to be used;

b) The surface wind direction and speed, including significant variations there from;

c) The QNH altimeter setting and, either on a regular basis in accordance with local arrangements or, if so requested by the aircraft, the QFE altimeter setting.

Note: *The meteorological information listed above is to follow the criteria used for meteorological local routine and special reports.*

6.1.3 If an aircraft enters a traffic circuit without proper authorisation, the possibility of an emergency must be recognised. The aircraft should be permitted to land if its actions indicate that it wishes to do so, and, if necessary, other aircraft are to be instructed to give way.

6.2 Essential Local Traffic Information

6.2.1 Information on essential local traffic shall be issued in a timely manner, either directly or through the unit providing approach control service when, in the judgment of the aerodrome controller, such information is necessary in the interests of safety, or when requested by aircraft.

6.2.2 Essential local traffic shall be considered to consist of any aircraft, vehicle or personnel on or near the manoeuvring area or traffic operating in the vicinity of the aerodrome, which may constitute a hazard to the aircraft concerned.

6.2.3 Essential local traffic shall be described so as to be easily identified.

6.3 **Clearance to Land**

6.3.1 An aircraft may be cleared to land when there is reasonable assurance that the separation prescribed in Section 6, Chapter 5 Paragraph 2 will exist when the aircraft crosses the runway threshold, provided that a clearance to land shall not be issued until a preceding landing aircraft has crossed the runway threshold.

6.3.2 To reduce the potential for misunderstanding, the landing clearance shall include the designator of the landing runway.

6.4 **Landing and Roll-out Manoeuvres**

6.4.1 When necessary or desirable in order to expedite traffic, a landing aircraft may be requested to:

a) Hold short of an intersecting runway after landing;

b) Land beyond the touchdown zone of the runway;

c) Vacate the runway at a specified exit taxiway;

d) Expedite vacating the runway.

6.4.2 In requesting a landing aircraft to perform a specific landing and/or roll-out manoeuvre, the type of aircraft, runway length, location of exit taxiways, reported braking action on runway and taxiway, and prevailing meteorological conditions shall be considered.

6.4.3 A HEAVY aircraft shall not be requested to land beyond the touchdown zone of a runway.

6.4.4 If the pilot-in-command considers that he or she is unable to comply with the requested operation, the controller shall be advised without delay.

6.4.5 A landing aircraft, which is considered by a controller to be dangerously positioned on final approach, shall be instructed to carry out a missed approach. An aircraft can be considered as 'dangerously positioned' when it is poorly placed either laterally or vertically for the landing runway.

6.4.6 When necessary or desirable, e.g. due to low visibility conditions, a landing or a taxiing aircraft may be instructed to report when a runway has been vacated. The report shall be made when the entire aircraft is beyond the relevant runway-holding position.

6.5 Abnormal Aircraft Configuration and Condition

6.5.1 Whenever an abnormal configuration or condition of an aircraft, including conditions such as landing gear not extended or only partly extended, or unusual smoke emissions from any part of the aircraft, is observed by or reported to the aerodrome controller, the aircraft concerned shall be advised without delay.

6.5.2 When requested by the flight crew of a departing aircraft suspecting damage to the aircraft, the departure runway used shall be inspected without delay and the flight crew advised in the most expeditious manner as to whether any aircraft debris or bird or animal remains have been found or not.

7 Control of Aerodrome Traffic

7.1 General

7.1.1 As the view from the flight deck of an aircraft is normally restricted, the controller shall ensure that instructions and information which require the flight crew to employ visual detection, recognition and observation are phrased in a clear, concise and complete manner.

7.1.2 Aircraft in the traffic circuit shall be controlled to provide the separation minima prescribed in

Section 6 Chapter 5 Paragraph ***2***, except that:

a) Aircraft in formation are exempted from the separation minima with respect to separation from other aircraft of the same flight;

b) Aircraft operating in different areas or different runways on aerodromes suitable for simultaneous landings or take-offs are exempted from the separation minima;

c) Separation minima shall not apply to aircraft operating under military necessity.

7.1.3 Sufficient separation shall be effected between aircraft in flight in the traffic circuit to allow the spacing of arriving and departing aircraft as outlined.

7.2 **Entry of Traffic Circuit**

7.2.1 The clearance to enter the traffic circuit should be issued to an aircraft whenever it is desired that the aircraft approach the landing area in accordance with current traffic circuits but traffic conditions do not yet allow a landing clearance to be issued. Depending on the circumstances and traffic conditions, an aircraft may be cleared to join at any position in the traffic circuit.

7.2.2 An arriving aircraft executing an instrument approach shall normally be cleared to land straight-in unless visual manoeuvring to the landing runway is required.

7.3 **Priority for Landing**

7.3.1 Priority shall be given to:

a) An aircraft which anticipates being compelled to land because of factors affecting the safe operation of the aircraft (engine failure, shortage of fuel, etc.);

b) Hospital aircraft or aircraft carrying any sick or seriously injured persons requiring urgent medical attention;

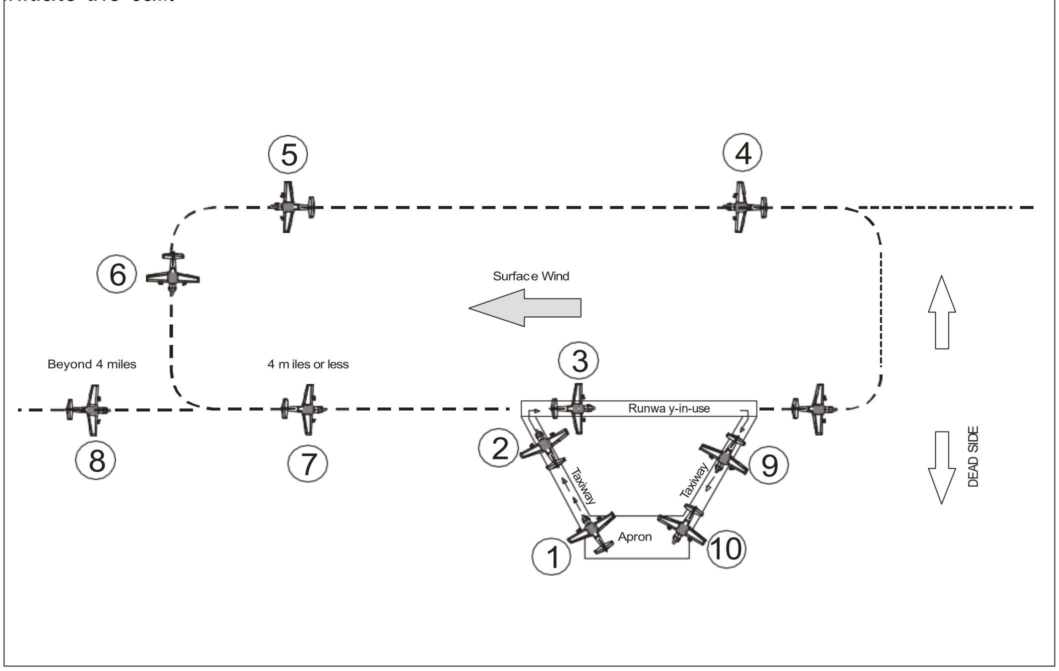
c) Aircraft engaged in search and rescue operations; and

d) Other aircraft as may be determined by the appropriate authority.

7.3.2 In cases of emergency it may be necessary, in the interests of safety, for an aircraft to enter a traffic circuit and effect a landing without proper authorization. Controllers should recognise the possibilities of emergency action and render all assistance possible.

7.4 **Designated Positions of Aircraft in the Aerodrome Traffic and Taxi Circuits**

7.4.1 The following positions of aircraft in the traffic and taxi circuits are the positions where the aircraft normally receive aerodrome control tower clearances. The aircraft should be watched closely as they approach these positions so that proper clearances may be issued without delay. Where practicable, all clearances should be issued without waiting for the aircraft to initiate the call.



Position 1 Aircraft initiates call to taxi for departing flight. Runway-in-use information and taxi clearances given.

Position 2 If there is conflicting traffic, the departing aircraft will be held at this position.
Engine run-up will, when required, normally be performed here.

Position 3 Take-off clearance is issued here, if not practicable at position 2.

Position 4 Aircraft reports on ‘downwind’ leg when abeam upwind end of the runway.

Position 5 Aircraft reports ‘late downwind’ if it is on the downwind leg, has been unable to report downwind and has passed the downwind end of the runway.

Note: *The down wind position is a mandatory call to be made by all aircraft in the circuit.*

Position 6 Aircraft reports ‘base’ leg (if required).

Position 7 Aircraft reports ‘final’. Clearance to land is issued here.

Note: *The final approach position is a mandatory call to be made by all aircraft.*

Position 8 Aircraft reports ‘long final’ (between 8 and 4 miles) when an aircraft is on a straight-in approach.

Position 9 Clearance to taxi to apron is issued here.

Position 10 Parking information issued here, if necessary.

Note 1: *Arriving aircraft executing an instrument approach procedure will normally enter the traffic circuit on final except when visual manoeuvring to the landing runway is required.*

Note 2: *For light aircraft operations, circuit dimensions may be reduced however the relative RTF reporting points are maintained.*

8 Reporting of Hazardous Surface Wind Conditions

8.1 Messages notifying hazardous surface wind conditions shall be sent when the cross-wind component exceeds 20 knots or:

a) At aerodromes used by light aircraft when the average wind speed exceeds 20 knots or the gusts exceed 25 knots from any direction;

b) At aerodromes used only by large aircraft when the average wind speed or the gusts exceed 30 knots from any direction.

8.2 Such messages must be sent as a SVC message using the priority GG and addressed to the collective addresses applicable to the situation.

8.3 Once the average surface wind drops below the criteria prescribed in paragraph 8.1, a SVC message shall be sent to cancel the previous message.

Section 3 Aerodrome Services

Chapter 2 Aerodrome Flight Information Service (AFIS)

1. General

1.1 Aerodrome flight information service is the term used to describe the provision of information useful for the safe and efficient conduct of aerodrome traffic at those aerodromes designated for use by general aviation where the SACAA determines that the provision of aerodrome control service is not justified. AFIS is not intended to be used at aerodromes designated as regular or alternate aerodromes for international commercial air transport operations.

1.2 In determining whether AFIS should be provided at a given aerodrome, the SACAA is expected to give due consideration to the type(s) of air traffic involved, the density of the air traffic, the topographical and meteorological conditions, and such other factors as may be pertinent to safety and efficiency.

1.3 Non-controlled aerodromes at which it is determined that AFIS will be provided shall be identified as “AFIS aerodromes” in order to distinguish them from controlled aerodromes.

1.4 AFIS shall be provided by a unit located at the aerodrome and shall provide flight information service and alerting service to all known flights operating on the manoeuvring area or within the ATZ (Class G) airspace.

1.5 AFIS is an information service only and operators providing AFIS must avoid giving the impression that an Aerodrome Control Service is being provided. AFIS shall not issue clearances; however, when, in their opinion, it will enhance safety, they may make suggestions, however such suggestions must be preceded by the word “Suggest”.

Note: *The AFIS unit is not an air traffic control unit. It is therefore the responsibility of pilots using the service provided by this unit to maintain proper separation in conformity with rules of the air.*

2. Basic elements of information provided to aircraft

2.1 The basic elements of information to be provided to aircraft by an AFIS unit should include, as appropriate, the following:

a) Meteorological information for arriving and departing aircraft. Such information shall be the same as that provided to aerodrome traffic by aerodrome control towers

   i. Current surface wind direction and speed including any significant variations;
   ii. Barometric pressure;
   iii. Air temperature;
   iv. Current visibility;
   v. Significant meteorological conditions in the take-off and climb-out area, or in the approach and landing area; and
   vi. Present weather including the amount and height of the base of low cloud;

b) AFIS will select the runway-in-use and pass this information to pilots approaching to land or about to take-off.

Note: *The term "runway-in-use" shall be used to indicate the runway which the AFIS considers to be the most suitable at that time for the type of aircraft expected to land at or take-off from the aerodrome.*

c) Information on known aircraft, vehicles or personnel on or near the manoevering area or aircraft operating in the vicinity of the aerodrome, which may constitute a hazard to the aircraft concerned;

d) Information on aerodrome conditions which is essential to the safe operation of aircraft. Such information should, to the extent possible, be the same as that provided to aerodrome traffic by aerodrome control towers:

   i. Construction or maintenance work on, or immediately adjacent to the manoevering area;
   ii. Rough or broken surfaces on a runway or taxiway;
   iii. Water on a runway;

iv. Other temporary hazards such as parked aircraft and birds on the ground or in the air;
v. Any unserviceability of the aerodrome lighting system; and
vi. Any other pertinent information.

e) Information on changes in the operational status of non-visual navigation aids and visual aids essential for aerodrome traffic;
f) VHF direction-finding information, when equipment is available;
g) Messages, including ATC clearances received from other ATSUs for relay to aircraft; and
h) Any other information contributing to safety.

2.2 Declaration of IMC

An AFIS unit shall declare an ATZ (Class G) to be IMC when the cloud ceiling is below 1500 feet and/or the visibility is below 5 km.

3 R/T Phraseologies

3.1 General

3.1.1 Pilots will frequently ask for clearances using the same phraseology as with Aerodrome Control Units, AFIS operators must guard against using the words ‘clear’ and ‘cleared’.

3.1.2 Clearances that are issued by an ATSU and are subsequently relayed by an AFIS operator, the clearance must be preceded by the name of the ATSU which issued the clearance.

Example: “ZSBMN this is Margate Radio – Johannesburg Area East clears ZS-BMN”

3.1.3 Any suggestions made to the aircraft must be preceded by the word “Suggest”.

Example: “Suggest you use only the taxiways as the grass areas are wet”.

3.2 AFIS phraseologies

3.2.1 Refer to Section 8, “Communications Procedures and Standard Phraseology” for basic ICAO phraseologies.

Section 3 **Aerodrome Services**

Chapter 3 **Reporting of Windshear**

1 Introduction

1.1 Windshear is a sustained change in the wind velocity along the aircraft flight path, which occurs significantly faster than the aircraft can accelerate or decelerate.

1.2 Windshear can occur at any level, but it is 'low level windshear', occurring from the surface to a height of approximately 1500 feet, which can cause problems of sufficient magnitude to affect the control of aircraft in departure or final approach phases of flight.

2 Conditions Conducive to Windshear

2.1 Controllers should be alert to the possibility of the existence of windshear in the following circumstances:

a) The presence of frontal/squall/thunderstorm activity in the vicinity of the airfield.

b) The presence of low level inversions where the surface wind will be significantly different from that at only a few hundred feet above the ground.

c) Local terrain or buildings considered in relation to wind speed and direction; such large obstructions can cause windshear as well as the more usual turbulence and gusts.

d)

3 Effects of Windshear

3.1 A combination of factors can make the analysis of windshear very complex, but three simple examples of the hazards of low level windshear are shown below:

a) As the aircraft flies from A to B and traverses the windshear line, the inertia of the aircraft maintains the ground speed of 170 kts and the change of wind vector causes a sudden fall in airspeed. This can result in reduced lift until the inertia of the aircraft has been overcome and the original airspeed regained. Clearly this may be hazardous at critical climb out speeds.

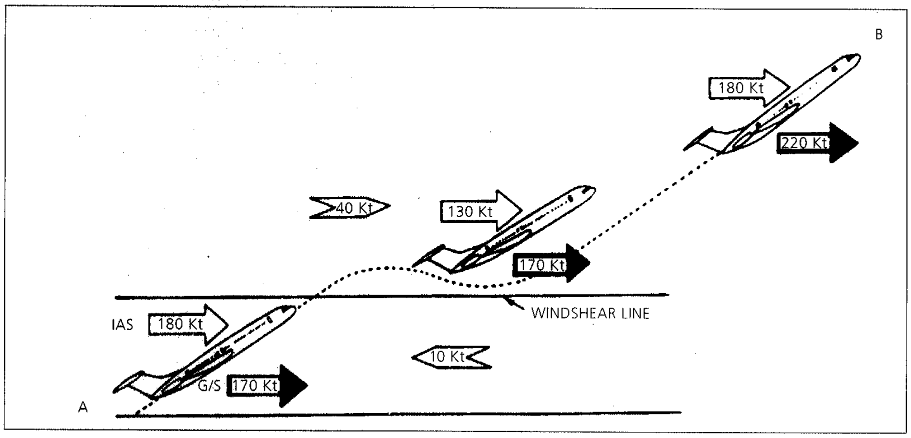


Figure 1 Climb Out Phase

b) If an aircraft on final approach passes through a windshear line which causes a sudden loss of airspeed and a consequent increase in the rate of descent, a rapid application of power will be required if the aircraft is not to sink to a dangerously low height.

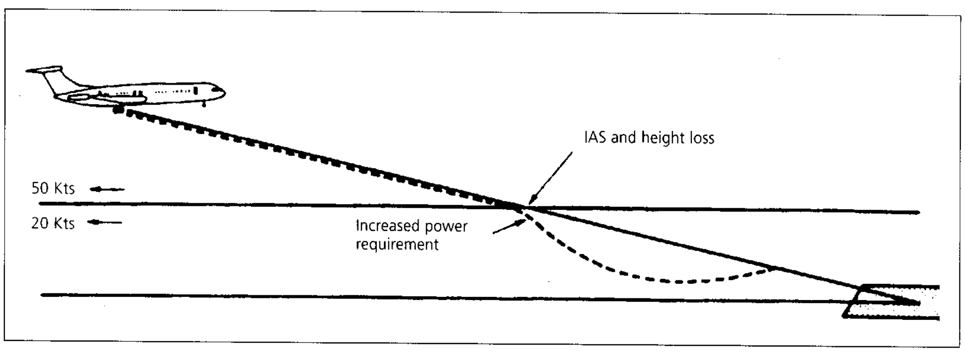


Figure 2 Final Approach

c) If the aircraft passes through a windshear line from a tailwind to a headwind component the inertia of the aircraft results initially in an *increased airspeed* and a deviation above the glidepath. The pilot's instinctive power reduction can result in the aircraft being short of power with a high rate of descent as the glidepath is approached and the effect of the inertia is lost. A rapid increase of power is now required if the aircraft is not to sink below the glidepath at a dangerously low altitude.

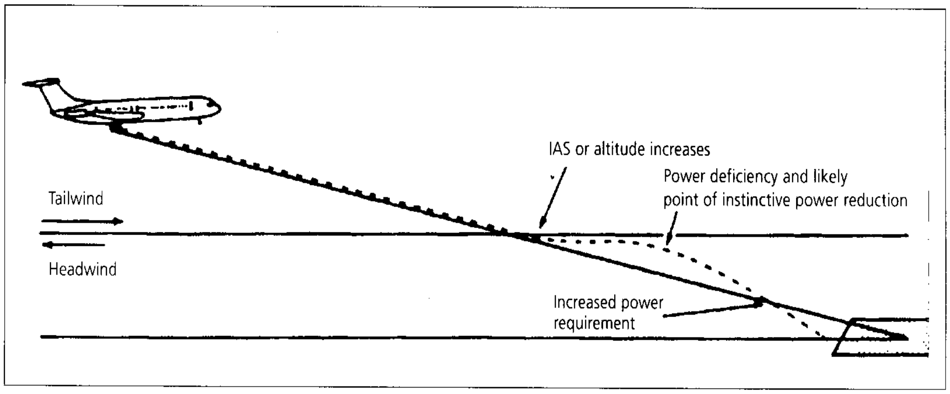


Figure 3 Final Approach

4 ATC Action

4.1 Due to the need to maintain both a safe margin above the stalling speed and a clearly defined flight profile, particularly during the climb-out and approach phases of flight, sudden changes in airspeed must be countered very rapidly.

4.2 Whenever a pilot reports windshear conditions to ATC, the information shall be relayed to subsequent inbound and outbound aircraft until confirmation is received that the condition no longer exists.

4.2.1 A pilot experiencing windshear should try to provide the following information to ATC:

a) A simple warning of the presence of windshear, even if no further information can be provided;

b) The height or height band where the windshear was encountered;

c) Details of the effects of the windshear on the aircraft i.e. speed loss or gain, vertical speed tendency etc.

d) If at all possible an estimate of the wind structure between the relevant levels.

Note 1: *Pilots of aircraft equipped with INS or other devices giving instant readouts of drift and ground speed should make full use of these facilities in order to give a quantitative description of the windshear.*

e) The magnitude of any temperature inversion;

f) A description of the layout of weather fronts or other identifiable phenomena.

Note 2: *The above information, particularly a) to c) should be given as soon as possible on the tower or any other convenient RTF frequency.*

4.3 On receiving notification of the presence of windshear, ATC should pass the following information without delay to aircraft taking-off or landing as well as to other aircraft likely to be affected:

a) A warning of the likely occurrence of wind shear based on pilot reports. If these reports have been given in terms of the effect on the aircraft, the warning from ATC should make it clear what manoeuvre was being performed at the time by the aircraft making the report, what type of aircraft made the report, and whether speed and height loss or gain was experienced.

Example: To an aircraft on approach to runway 24:

"A 737 which has just taken off from runway 24 reports strong wind shear at 300 feet, giving a speed increase of 30 knots, and a strong drift to the left."

b) A warning of a likely occurrence of windshear, based on MET office assessment of the current weather situation;

c) The known wind velocities at various heights when shear is known to exist,

Example: *"Surface wind 300/10 knots; wind at 500 feet 340/40 knots".*

It may sometimes be desirable to amplify this in order to give an indication of the gradient of the shear.

Example: *"Surface wind 300/10 knots: sudden wind shear at 500 feet 340/40 knots'*

or

"Surface wind 300/10 knots; gradual wind shear from 340/40 knots at 500 feet down to surface".

d) Where windshears are associated with a known frontal system, or other identifiable weather phenomena, this can be expressed in terms such as:-

"Occlusion just to the west of airfield, Surface wind at 5 miles west is 360/25 knots; surface wind at airfield is 080/10 knots"

During prolonged periods of windshear the information should be included in ATIS broadcasts and should be subject to review at appropriate intervals by requesting further pilot reports

e) The magnitude of any temperature inversion.

4.3 **ATIS Broadcasts**

At airfields where ATIS is available windshear information may be included in the broadcasts. Controllers should amplify the information for individual aircraft if necessary.

Section 3 Aerodrome Services

Chapter 4 Use of Surveillance Systems in Aerodrome Control Services

1 Situation Display (SD)

1.1 An ASD is provided at certain aerodromes to assist in achieving maximum runway utilisation and aerodrome capacity. Operation of an SD is not associated with a particular rating and must not be used as an ATS surveillance system to provide approach services unless the controller has undertaken specified training and is suitably rated and validated to do so.

1.2 When authorised by and subject to conditions prescribed in the ATSU SSI Manual, an AD may be used in the provision of an aerodrome control service to perform the following functions:

a) Determine the landing order, spacing and distance from touchdown of arriving aircraft,

b) Assist in applying longitudinal separation for departing aircraft;

c) Enable the controller to confirm that the initial track of a departing aircraft conforms with the clearance issued;

d) Monitoring of other aircraft in the vicinity of the aerodrome;

e) Provide information to aircraft on the position of other aircraft in the circuit or carrying-out an instrument approach; and

f) Providing navigation assistance to VFR flights.

1.3 In prescribing conditions and procedures for the use of an SD in the provision of aerodrome control service, the appropriate ATS authority shall ensure that the availability and use of radar information will not be detrimental to visual observation of aerodrome traffic.

Note: *Control of aerodrome traffic is based on visual observation of the manoeuvring area and the vicinity of the aerodrome by the aerodrome controller.*

2. Use of Advanced Surface Movement Ground Control Systems (ASMGCS)

Note: *Requirements concerning the provision of Surface Movement Radar (SMR) are contained in Annex 14, Volume I, Chapter 8. Guidance material on the use of SMR is contained in the Air Traffic Services Planning Manual (Doc 9426), Part II.*

2.1 General Provisions

2.1.1 The use of ASMGCS should be related to the operational conditions and requirements of the particular aerodrome (i.e. visibility conditions, traffic density and aerodrome layout).

2.1.2 ASMGCS systems shall enable the detection and display of the movement of all aircraft and vehicles on the manoeuvring area in a clear and unambiguous manner.

2.1.3 Aircraft and vehicle position indications may be displayed in symbolic or non-symbolic form. Where ***electronic data*** labels are available for display, the capability should be provided for inclusion of aircraft and vehicle identification by manual or automated means.

2.2 Functions

2.2.1 AMGCS should be used to augment visual observation of traffic on the manoeuvring area and to provide surveillance of traffic on those parts of the manoeuvring area which cannot be observed visually.

2.2.2 The information displayed on an AMGCS display may be used 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 local traffic on or near the manoeuvring area;

d) Determining the location of aircraft and vehicles on the manoeuvring area;

e) Providing directional taxi information to aircraft when requested by the pilot or deemed necessary by the controller. Except under special circumstances, e.g. emergencies, such information should not be issued in the form of specific heading instructions;

f) Providing assistance and advice to emergency vehicles.

2.3 Identification of Aircraft

2.3.1 Where AMGCS is used, aircraft maybe identified by one or more of the following procedures:

a) By correlating a particular radar position indication with:

   i) An aircraft position visually observed by the controller;

   ii) An aircraft position reported by the pilot; or

   iii) An identified radar position indication displayed on a surveillance situational display;

b) By transfer of ATS surveillance system identification when authorised by the appropriate ATS authority; and

c) By automated identification procedures when authorised by the appropriate ATS authority.

Section 3 Aerodrome Services

Chapter 5 Aerodrome Lighting Aids

1. Operation of Aeronautical Lights

1.1 Aerodrome Control is responsible for the operation of all aeronautical lights which are controlled from the control tower.

1.2 Aerodrome Control shall bring to the attention of the appropriate authorities those aeronautical lights such as obstruction lights which are unserviceable and that may pose a safety risk to local air traffic.

1.3 At aerodromes equipped with lights of variable intensity a table of intensity settings, based on conditions of visibility and ambient light, should be provided for the guidance of air traffic controllers in effecting adjustment of these lights to suit the prevailing conditions. When requested by an aircraft, further adjustment of the intensity shall be made whenever possible.

1.4 Monitoring of Visual Aids

1.4.1 Aerodrome controllers shall make use of automatic monitoring facilities, when provided, to ascertain whether the lighting is in good order and functioning according to selection.

1.4.2 In the absence of an automatic monitoring system or to supplement such a system, the aerodrome controller shall visually observe such lighting as can be seen from the aerodrome control tower and use information from other sources such as visual inspections or reports from aircraft to maintain awareness of the operational status of the visual aids.

1.4.3 On receipt of information indicating a lighting fault, the aerodrome controller shall take such action as is warranted to safeguard any affected aircraft or vehicles, and initiate action to have the fault rectified.

2. Period of Operation

2.1 All aeronautical ground lights shall be operated in the following circumstances:

a) Continuously during the official hours of darkness;

b) At any time when their use based on weather conditions is considered desirable for the safety of air traffic.

2.2 Lights on and in the vicinity of aerodromes that are not intended for en-route navigation purposes may be turned off if no likelihood of either regular or emergency operation exists, provided that they can be again brought into operation at least one hour before the expected arrival of an aircraft.

3. Approach Lighting

3.1 Approach lighting includes such lights as simple approach lighting systems, precision approach lighting systems, visual approach slope indicator systems, circling guidance lights, approach light beacons and runway alignment indicators.

3.2 In addition to Chapter 5, paragraph 2.1; approach lighting shall be operated:

a) By day when requested by an approaching aircraft;

b) When the associated runway lighting is operated.

3.3 The lights of a visual approach slope indicator system shall be operated during the hours of daylight as well as of darkness and irrespective of the visibility conditions when the associated runway is being used.

4. Runway Lighting

4.1 Runway lighting includes lights such as edge, threshold, centre line, end, touchdown zone and wing bar lights.

4.2 Runway lighting shall not he operated if that runway is not in use for landing, take-off or taxiing purposes, unless required for runway inspections or maintenance.

4.3 Runway lighting following a take-off shall be provided at aerodromes where air traffic control service is provided and where lights are centrally controlled, the lights of one runway shall remain lighted after take-off as long as is considered necessary for the return of the aircraft due to an emergency occurring during or immediately after take-off.

5. Stopway Lighting

Stopway lights shall be operated whenever the associated runway lights are operated.

6. Taxiway Lighting

6.1 Taxiway lighting includes such lights as edge visual aids lights, centre line lights, stop bars and clearance bars.

6.2 Where required to provide taxi guidance, taxiway lighting shall be turned on in such order that a continuous indication of the taxi path is presented to taxiing aircraft. Taxiway lighting or any portion thereof may be turned off when no longer needed.

7. Stop Bars

7.1 Stop bars shall be switched on to indicate that all traffic shall stop and switched off to indicate that traffic may proceed.

Note 1: *Stop bars are located across taxiways at the point where it is desired that traffic stop, and consist of lights, showing red, spaced across the taxiway.*

Note 2: *Those aerodromes equipped with Stop Bar lights should operate these lights on a twenty- four hour basis irrespective of whether VMC prevails or not in order to prevent Runway Incursions.*

8. Obstacle Lighting

8.1 Obstacle lighting includes such lights as obstacle, unservicability lights and hazard beacons.

8.2 Unservicability lights may not be turned off as permitted under Chapter 5, paragraph 2.2 while the aerodrome is open.

Section 3 Aerodrome Services

Chapter 6 Aerodrome Serviceability

1. Closure or Restricted Operation of Aerodromes

1.1 **Responsibility of the Aerodrome Authority**

1.1.1 The aerodrome authority is responsible for decisions regarding the operational status of the aerodrome including the apron and manoeuvring area in respect of:

a) Routine operational limitations, e.g. runway maintenance;

b) Unforeseen hazards to aircraft operations, e.g. deteriorating surface conditions, obstructions etc. The aerodrome authority will also make decisions regarding:

i) The closure or re-opening of the aerodrome;

ii) The withdrawal or return to use of runways (taxiways) and associated lighting aids;

iii) The revision of declared distances;

iv) Any marking required in connection with the above;

v) Initiating NOTAM action to promulgate changes in serviceability.

1.2 **Responsibility of the Air Traffic Control Unit**

1.2.1 The aerodrome authority shall be informed immediately aerodrome control becomes aware from reports or observations that there is a hazard to the movement of aircraft on the apron or manoeuvring area

1.2.2 The aerodrome authority may take some time to assess the situation. During this period the controller is to decide the action to take according to the circumstances:

a) Where an operational occurrence has resulted in an obstruction in the vicinity of the runway in use:

i) Withhold take-off and landing clearance when the obstruction is within the cleared and graded area of the runway;

ii) Withhold take-off and landing clearance if there is any doubt as to the position of the obstruction.

iii) Pilots will be advised of the reason for withholding clearance together with the position and nature of the obstruction.

b) When the obstruction is obviously outside the cleared and graded area but on or in the vicinity of the apron or manoeuvring area the pilot will be advised of the position and nature of the obstruction. It is the responsibility of the pilot to decide whether or not to continue operations.

1.2.3 When the aerodrome authority has decided upon the operational status of the apron or manoeuvring area, they will inform the air traffic control unit of any restrictions or closures. The ACC should be informed of any situations which may restrict operations at the aerodrome.

2. Work on the Manoeuvring Area

2.1 When repair or installation work, authorised by the aerodrome authority, is to take place on the manoeuvring area, a representative of the working party must be briefed by air traffic control about subjects relating to the proposed work, for example:

a) Methods of access to working area,

b) The area in which vehicles may operate,

c) The runway in use and the effects of any changes,

d) Methods of obtaining permission to cross the runway in use,

e) Signals or methods of indicating that vehicles and personnel must leave the manoeuvring area.

2.2 The representative of the working party should possess an authorisation to work on the aerodrome issued by the aerodrome authority. This is to be counter-signed by the senior controller on duty, subsequent to the briefing, and a copy retained or a record of the briefing entered in the ATC Occurrence Log book.

3. Inspection of Runways

3.1 At least two regular inspection should be made daily. At aerodromes which are open 24 hours, the first runway inspection should be conducted as soon as practicable after first light. At non-24 hour stations the inspection should take place before flying commences. A further inspection should take place before night flying.

3.2 Additional surface inspections should be made:

a) At cessation of work on the manoeuvring area;

b) When a runway not previously inspected is brought into use;

c) Following an aircraft accident;

d) Following an abandoned take-off by a turbine engined aircraft due to engine malfunction, or by any aircraft due to burst tyres;

e) During adverse weather conditions where the possibility of standing water is suspected;

f) Following an emergency landing or precautionary landing;

g) When considered necessary by the air traffic control unit or the aerodrome authority or as detailed in the SSI Manual.

4. Aerodrome Fire/ Rescue Service

4.1 General

4.1.1 Where aerodrome fire/ rescue services are provided aerodrome control is responsible for:-

a) Alerting the fire/ rescue services whenever aerodrome control is aware of any accident or potential hazard, e.g. Aerodrome control should alert the aerodrome fire/ rescue services to stand-by whenever an aircraft is making a landing with one or more engines shut-down

Note 1: *This procedure may be omitted in the case of training flights intentionally making practice asymmetric landings.*

Not e 2: *The term "asymmetric" means that a twin engined aircraft is operating on one engine, or a multi-engined aircraft is operating with one or more of its engines inoperative on one side.*

b) Alerting aerodrome fire/ rescue services when an aircraft advises before landing that it has or suspects it has, undercarriage or brake failure. If the aircraft has no other form of failure which necessitates an immediate landing, aerodrome control should not clear the aircraft for landing until the aerodrome fire/ rescue services have taken up position or it is clear that they will be able to do so while the aircraft is on final approach.

c) In the event of an aborted take-off by any aircraft the aerodrome fire/ rescue services shall be alerted immediately.

4.1.2 Aerodrome control shall ensure that aircraft are advised prior to take-off and landing if the safety services are not fully available, owing to attendance at an incident or due to major unservicability. It will then be the responsibility of the pilot-in-command of an aircraft to decide whether such deficiencies necessitate a change of flight plan.

4.1.3 Air traffic control should co-operate with the aerodrome fire service and aerodrome authority in the pre-planning of preferential routes through the manoeuvring area.

4.1.4 Controllers are to ensure that they are familiar with these routes.

4.2 **Aerodrome Categories**

4.2.1 The fire service category of an aerodrome is assessed according to the length of the longest aircraft expected to use it.

4.3 **Temporary Depletion**

4.3.1 Temporary depletion of the fire service may restrict the use of the aerodrome and the aerodrome authority is responsible for ensuring that arrangements are made to warn pilots and aircraft operators of any significant changes in the level of protection available. If any depletion is significant enough to warrant a restriction of aeroplane movements then the temporary level of fire service category should be immediately promulgated by NOTAM and radio. When fire services are depleted ATS Management of the ACC must be informed.

4.4 **Practice Exercises and Drills**

4.4.1 The necessity for rapid and co-ordinated action in the event of a crash requires the closest co-operation between the air traffic control unit and the aerodrome fire service, and the frequent rehearsal of procedures.

4.4.2 The air traffic control unit, in consultation with the aerodrome fire service, is to assist in providing practice emergencies which are to be held frequently and made as realistic as possible.

4.5 **Exercises on the Manoeuvring Area**

4.5.1 The aerodrome fire service will obtain clearance and any special instructions from aerodrome control before testing vehicles or carrying out exercises on the manoeuvring area.

4.5.2 Arrangements shall be made in co-operation with the aerodrome fire officer for the air traffic control unit to provide instruction to aerodrome fire service personnel concerning instructions used on an aerodrome.

4.6 **Other Duties of the Aerodrome Fire Service**

4.6.1 At certain airfields the aerodrome fire service may undertake other extraneous duties. These duties must not interfere with the prime function of the aerodrome fire service.

4.6.2 The aerodrome fire service is frequently called upon for 'Special Services'. These include attendance at accidents to personnel, pumping out flooded premises, clearance of fuel spillage etc. If any of these is considered to be an emergency and occur within the radius of action of the aerodrome fire service, attendance will be made immediately. The air traffic control unit will be informed and advised of any depletion of the emergency services.

Section 4 Approach Control Services

Chapter 1 Approach Control

Note: *This section should be read in conjunction with Section 2 (General ATS), Section 6 (Separation Methods and Minima) and Section 7 (ATS Surveillance Procedures).*

1. Provision of Service

1.1 Approach control services within the Republic of South Africa's Flight Information Regions comprises of ATS surveillance system and procedural control in airspaces which is not under the jurisdiction of an Area control unit, aerodrome control unit or flight information service and any additional airspace which may be designated in the approved Station Standing Instruction Manual including temporary designated airspace as published in the IAIP.

1.2 An Approach Control Unit Shall Provide the following services:

a) Approach Control Service;

b) Flight Information Service;

c) Alerting Service and assistance to organizations involved in SAR Actions;

d) Flow control co-ordination including demand and capacity balancing to all flights operating in controlled airspace.

1.3 The position indications presented on a situation display may be used to perform the following additional functions in the provision of an approach control service:

a) Provide vectoring of arriving traffic on to pilot-interpreted final approach aids;

b) Provide flight path monitoring of parallel ILS approaches and instruct aircraft to take appropriate action in the event of possible or actual penetrations of the no transgression zone (NTZ);

c) Provide vectoring of arriving traffic to a point from which a visual approach can be completed;

d) Provide vectoring of arriving traffic to a point from which a precision radar approach or a surveillance radar approach can be made;

e) Provide flight path monitoring of other pilot-interpreted approaches;

f) In accordance with prescribed procedures, conduct:

  i) Surveillance radar approaches;

  ii) Precision radar (PAR) approaches; and

g) Provide separation between:

  i) Succeeding departing aircraft;

  ii) Succeeding arriving aircraft; and

  iii) A departing aircraft and a succeeding arriving aircraft.

1.3 An Approach control unit may be established as a separate or dedicated approach unit or combined with an aerodrome control unit or an Area Control unit when it is necessary to combine the relevant functions applicable to each unit under the responsibilities of one unit.

2. Responsibilities.

2.1 Within controlled airspace (Class A and C) and under the following local Aerodrome weather conditions an Approach Control unit shall provide an approach service to all aircraft whether IFR, VFR or Special VFR from the time and place at which:

2.1.1 **During IMC**:

2.1.1.1 Arriving aircraft are released by an area control unit until they have landed and vacated the runway in use.

2.1.1.2 Departing aircraft from the holding point prior to entering the runway in use, until they are either:

a) Transferred to an area control unit, or

b) They are clear of controlled airspace and separated from other flights afforded standard separation by the approach control unit.

2.1.2 **During VMC**:

2.1.2.1 Arriving aircraft are released by an area control unit until they have been released to an aerodrome control unit.

2.1.2.2 Departing aircraft are transferred from an aerodrome control unit until they are either:

a) Transferred to an area control unit, or

b) They are clear of controlled airspace and separated from other flights afforded standard separation by the approach control unit.

2.1.3 **In All Weather Conditions**:

2.1.3.1 Over flying flights are released from an area control unit until they are either:

a) Transferred to an area control unit, or

b) They are clear of controlled airspace and separated from other flights afforded standard separation by the approach control unit.

2.1.3.2 Aircraft arriving from uncontrolled airspace place themselves under control of the approach control service when they have entered controlled airspace. Prior to entering controlled airspace such flights shall be provided with an advisory service.

2.1.3.3 Unless the SACAA has approved a reduced separation (Deemer), Approach control shall provide standard separation to :

a) All IFR flights;

b) Between all IFR and SVFR flights; and

c) All SVFR flights.

2.2 An approach control unit may delegate part of its functions to an aerodrome control unit. Normally this will be delegated to a specialist aerodrome unit and stipulated in the SSI Manual. Functions that could be delegated to the Aerodrome unit may include, amongst others:

a) Control of the runway in use during IMC conditions;

b) Applying Aerodrome Control and separation to traffic operating within the aerodrome traffic circuit.

2.3 Aircraft within an ATZ Class C or CTR are required to comply with instructions from the applicable air traffic control unit. Flights in uncontrolled airspace outside an ATZ Class C or CTR are allowed without an ATC clearance. Flights that operate in the vicinity of an ATZ Class C or CTR and are in radio contact with the air traffic control unit are expected to comply with an air traffic control instructions unless otherwise stated by the pilot. Although it can be assumed that the pilot operating outside an ATZ Class C or CTR will still comply with an Air traffic control instruction, vigilance should be maintained that the pilot may not follow the instructions and may not advise the ATC unit.

Section 4 Approach Control Services

Chapter 2 Coordination and Transfer of Control Procedures

1 General

1.1 Aircraft receiving an Approach Control service shall not be permitted to enter the airspace of another Air traffic control unit or sector unless prior co-ordination has taken place. The responsibility for initiating co-ordination lies with the controller of the unit or sector transferring control, who shall comply with any conditions specified in the SSI Manual or letters of agreement (LOA) between the units or sectors.

2 Co-ordination With Other ATSUs or Sectors

2.1 Approach control shall co-ordinate with Aerodrome control in the following circumstances:

a) Aircraft Approaching to Land

i. The aircrafts' estimated arrival time;

ii. Proposed altitude or level over the aerodrome;

iii. Pertinent information on all controlled arriving flights including type of flight (IFR, CVFR, SVFR or VFR);

iv. The anticipated order in which control of these aircraft are to be transferred;

v. Point at which control will be transferred;

vi. The anticipated delay to departing flights together with the reason for such delays.

b) Arriving aircraft that shall be cleared to visual reporting/holding positions within the ATZ Class C or CTR;

c) Aircraft that will route through the aerodrome traffic circuit.

2.2 Aerodrome Control shall co-ordinate with approach control as stipulated in the SSI Manual in the following circumstances:

a) Departing IFR Flights;

b) Arriving aircraft that enter the ATZ Class C or CTR directly and make their first call on the tower frequency;

c) Information concerning missed approaches;

d) Where deemed necessary by the approach unit a statement when the first aircraft in an approach sequences is in communication with and is sighted by the aerodrome control tower and that reasonable assurance exists that a landing can be accomplished;

e) Arrival and departure times;

f) All available information relating to overdue or unreported aircraft;

g) Information concerning aircraft that constitute essential local traffic to aircraft under the control of the unit providing approach control service.

2.3 Area control shall co-ordinate with approach control on arriving aircraft which is to be cleared to an aerodrome holding facility or visual holding position, instead of the normal holding facility as published in the relevant SSI Manual.

2.3.1 Approach control shall supply Area control with the following data:

a) Runway in use;

b) The lowest level at the holding facility available for use by area control;

c) The average time interval between successive approaches (if different from the published interval);

d) Expected approach times (EAT) or onward clearance times (OCT) and revisions of these times if necessary;

e) Arrival times over the holding point if these vary from the estimate by 3 minutes or more;

f) ATD for outbound flights together with estimates for the transfer points;

g) Inbound clearances for arriving flights if such clearances shall differ from standard clearances as published in the SSI Manual, in the following sequence:

  i. Revised Inbound clearance – Aircraft callsign;

  ii. Clearance limit;

  iii. Route or STAR;

  iv. Level at holding facility including level at the entry point if applicable;

  v. EAT/OCT (or if no delay is anticipated the words No-Delay).

Example: *(Inbound clearance – SAA503 Cleared FAJS ST4A STAR FL160 to cross STV FL180 or* *below No delay).*

h) Missed approaches when re-routing or diversion is entailed, in order that the subsequent actions may be co-coordinated;

i) All information relating to overdue aircraft;

j) Significant weather that may affect operations.

Note: *The above items may be published in the relevant SSI Manual or LOP as standard routine procedures and need not be co-coordinated individually for each aircraft.*

3 Transfer of control

3.1 The responsibility for control of an arriving aircraft shall be transferred from an approach control unit to an aerodrome control unit when the aircraft is :

a) In the vicinity of the aerodrome; and

i. It is considered that the approach and landing will be completed with visual reference to terrain;

ii. The aircraft has reached uninterrupted visual meteorological conditions;

iii. The aircraft is entering the aerodrome traffic circuit; and

iv. In the case of consecutive visual approaches when the following aircraft has reported terrain in sight and that they are able to maintain separation from the preceding aircraft.

Note: *In these cases above the volume of traffic and aerodrome control workload must be such as to allow the use of one of the reduced separations permitted in the vicinity of aerodromes.*

b) At a prescribed point or altitude/level as specified in the relevant SSI Manual;

c) The aircraft has landed;

d) IFR flights completing an instrument approach may be also instructed to establish communication with aerodrome control (for the purpose of obtaining landing clearance and essential aerodrome information) when the aircraft has become number one to approach and, for following aircraft, when they are established on final approach and have been provided with appropriate separation. Until such aircraft are flying with visual reference to terrain the responsibility for separation between them shall remain with approach control; aerodrome control shall not issue any instructions or advice which would reduce the separation established by approach control.

3.2 A unit providing approach control service shall retain control of arriving aircraft until such aircraft have been transferred to the aerodrome control tower and is in communications with the aerodrome control tower. Not more than one arrival shall be cleared to a unit providing aerodrome control service during IMC at a time, except when prior arrangements have been made by the appropriate ANSP and where appropriate specified in the SSI Manual.

3.3 Approach may authorise an aerodrome control tower to release an aircraft for take-off subject to the discretion of the aerodrome control tower with respect to arriving aircraft.

3.4 Aerodrome control towers shall obtain approval from the unit providing approach control service prior to authorising operations of special VFR flights.

Section 4 Approach Control Services

Chapter 3 Procedures for Departing Aircraft

1 General

1.1 Clearances for departing aircraft issued by an approach control unit shall specify, when necessary for the separation of aircraft:

a) Runway for take-off;

b) Direction of turn after take-off; or the designator of the assigned SID, if applicable;

c) Clearance limit;

d) Altitude/Level of flight and changes of level;

e) Allocated SSR code.

1.2 The following items may be included as necessary:

a) Track to be made good before turning onto desired heading;

b) Time, point and/or rate at which changes of level should be made;

c) Time, point and /or rate at which a level change shall be made;

d) Any other necessary manoeuvres consistent with safe operation of the aircraft.

1.3 At aerodromes where SIDs has been established, departing aircraft should normally be cleared to follow the appropriate SID.

1.3.1 When a departing aircraft on a SID is cleared to climb to a level higher than the initially cleared level or the level(s) specified in a SID, the aircraft shall follow the published vertical profile of a SID, unless such restrictions are explicitly cancelled by ATC.

1.4 Aircraft operating on an IFR flight plan shall normally request start-up clearance before starting their engines.

1.4.1 Such clearances will be obtained through the Approach control planner and this will imply that there will be a minimum delay on departure. Start clearances shall also only be issued considering any air traffic flow management procedures in force (Flow restrictions, slots etc.)

1.5 Unless prescribed by the relevant SSI Manual, approach control shall obtain an area control clearance for all outbound controlled flights. These clearances will be passed to the aircraft concerned along with the relevant approach clearance and pilots shall read these clearances back correctly before they are permitted to take-off.

***Note**: For piston-engine aircraft, area control clearances will normally be obtained while the aircraft is taxiing out. Whenever possible, approach control should anticipate aircraft requests for area control clearance.*

1.6 At stations where more than one approach frequency is available or where, due to unservicability, the normal approach frequency is not in operation, approach shall advise aerodrome control of the frequency to be used by departing flights.

1.7 Departing aircraft may be expedited by suggesting a take-off direction which is not into wind. However, it is the responsibility of the pilot to decide between making such a take-off or waiting for normal take-off in a preferred direction.

1.8 Flights will normally be cleared in the order in which they call for clearance; however, discretion may be used by approach control in varying this order to reduce overall traffic delay. Approach control should advise operating companies when the anticipated delay in departing aircraft, due to traffic conditions, is likely to exceed 15 minutes.

2 Loss of Communication

2.1 Approach control shall be responsible for initiating action to establish communications if an aircraft has not contacted him within three (3) minutes after departure.

Section 4 Approach Control Services

Chapter 4 Procedures for Arriving Aircraft

1 General

1.1 When it becomes evident that delays of more than twenty (20) minutes will be encountered by arriving aircraft, operators or designated representatives shall, to the extent practicable be notified and kept informed on any changes in such expected delays

2 Information to Arriving Aircraft

2.1 After an arriving aircraft has made initial contact with an approach control unit, the following information shall be passed as soon as practicable to the aircraft (Unless such information has already been passed by the area control unit and is still valid/current).

a) ATC clearance (STAR, routing heading to fly etc) including clearance limit;

b) Cleared level;

c) EAT.

Note 1*: The assigned level in the inbound clearance to arriving aircraft shall not be below the initial approach altitude even though pilots are responsible for ensuring their own terrain clearance under procedural control.*

Note 2: When an arriving aircraft on a STAR is cleared to descend to a level lower than the level or the level(s) specified in a STAR, the aircraft shall follow the published vertical profile of a STAR, unless such restrictions are explicitly cancelled by ATC. Published minimum levels based on terrain clearance shall always be applied.

d) Runway-in-use;

e) Present weather or confirmation of ATIS broadcast;

f) QNH;

g) Transition Level.

2.2 Additional information may include the following:

a) Current surface conditions e.g. surface water depth, braking action or other temporary hazards.

b) Changes in the operational status of visual and non-visual aids essential for the approach and landing.

c) Runway visual range.

2.3 Subsequent Changes of Information

2.3.1 Aircraft which have received the information above must be kept informed of the following until they have landed:-

a) Significant changes in the meteorological and runway conditions.

b) Additional operationally significant reports by pilots or aerodrome control unit, e.g. wind shear, standing water etc.

c) Further changes in the operational status of approach or landing aids.

2.4 When an aircraft is in the concluding stages of an instrument approach, however, such information will only be passed if a marked deterioration has occurred which the ATC considers likely to affect the safety of the aircraft.

3 Aircraft in the Hold

3.1 **Holding Procedures**.

a) Holding shall be accomplished in accordance with notified procedures. If the notified entry and holding procedures are not known to the pilot, the appropriate air traffic control unit shall describe the procedures to be followed.

b) Levels at holding facilities shall be assigned so as to permit aircraft to approach in their correct order. Normally the first aircraft to arrive over a holding facility should be at the lowest level with following aircraft at successively higher levels.

c) Departure times of aircraft from the holding facility shall be based on the published approach interval between aircraft landing. If the weather conditions are such that the pilot may encounter difficulty in completing the landing, the time interval may be increased to allow the first aircraft to land before the second aircraft commences descent of final approach.

d) If a pilot advises that he is unable to comply with approach control holding or communication procedures, alternative procedures requested by him should be approved if traffic conditions permit.

e) The aircraft at the lowest level in the holding stack will normally be the first aircraft cleared to commence approach. Approach control shall, whenever possible, clear aircraft into the holding stack at the lowest level available in the order in which they are estimated to arrive over the holding point. However, special priority may be given in accordance with the priorities as laid down in *Section 2, Chapter 8*. The second aircraft in the approach sequence may be instructed to descend to the level, or if lateral separation only was maintained, to proceed to the position previously occupied by the first aircraft after the first aircraft has reported leaving the level or position.

***Note**: Care should be taken when clearing aircraft to the level which has just been vacated by a preceding aircraft that standard vertical separation is maintained.*

3.2 Approach Sequence

3.2.1 The approach sequence shall be established in a manner which will facilitate arrival of the maximum number of aircraft with the least average delay. Priority shall be given to:

a) An aircraft which anticipates being compelled to land because of factors affecting the safe operation of the aircraft (engine failure, shortage of fuel, etc);

b) Hospital aircraft or aircraft carrying any sick or seriously injured person requiring urgent medical attention;

c) Aircraft engaged in SAR operations; and

d) Other aircraft as may be determined by the appropriate authority.

3.2.2 The second aircraft shall be cleared to leave the holding point at a specified time and to descend for approach when:

a) The preceding aircraft has landed; or

b) Reported on final that he has the runway in sight and is able to complete his approach with visual reference to the runway and reasonable assurance exists that a normal landing can be accomplished; or

c) Is sighted by and is in communication with Aerodrome/Approach Control and reasonable assurance exists that a normal landing can be accomplished; or

d) Its position and level have been ascertained by means of an ATS surveillance system operating at the aerodrome and reasonable assurance exists that a normal landing can be accomplished; or

e) The required landing interval has been established or the preceding aircraft has crossed the facility on final approach.

3.2.3 When aircraft are given a time at which to leave the specified aerodrome holding facility, the departure time shall be passed sufficiently in advance to permit the pilot to arrange his flight path accordingly.

3.2.4 The first aircraft will descend from the lowest level of the holding stack and commence approach when instructed.

3.2.5 The second aircraft in the approach sequence may be instructed to descend to the level previously occupied by the first aircraft, after the first aircraft has reported vacating it. If, however, severe turbulence is known to exist, the instruction shall be withheld until the first aircraft has reported at least 1000 feet below the vacated level.

3.2.6 Provision shall be made to ensure that the aerodrome control tower is kept informed of the sequence in which aircraft will be established on final approach for landing as well as any instructions and restrictions which have been issued to such aircraft in order to maintain separation after transfer of control to the aerodrome controller.

Section 5 Area Control Services

Chapter 1 Area Control Service

Note: *This section should be read in conjunction with Section 2 (General ATS), Section 6 (Separation Methods and Minima) and Section 7(ATS Surveillance Procedures).*

1 Provision of Services

1.1 Area control service within the Republic of South Africa's flight information regions comprises of radar and non-radar ATS in airspaces which is not under the jurisdiction of an approach unit, aerodrome control unit or aerodrome flight information service unit and any additional airspace which may be designated in the approved Station Standing Instruction Manual.

1.2 Area control shall provide the following services:

a) Control service;

b) Traffic synchronisation as well as demand and capacity balancing to all flights operating in controlled airspace and to IFR flights in Class F airspace wishing to enter controlled airspace.

c) Advisory service to IFR flights operating within advisory airspace.

d) Flight information service, Alerting service and assistance to organisations involved in SAR.

Airspace	**Services Provided *(With or without radar)***	**Remarks**
Classes A and C (Controlled airspace)	Air traffic control service. Flight information service. Alerting service.	Aircraft are required to comply with air traffic control instructions
Class F* (Advisory Areas or Routes)	Air traffic advisory service Flight information service Alerting service	Pilots of aircraft receiving a service from an air traffic control unit may be assumed to be complying with instructions unless they state otherwise.
Class G (Uncontrolled Airspace)	Flight information service including proximity warnings Alerting service	

*Aircraft operating within advisory airspace which lie within radar advisory service areas should, whenever possible, be provided with a radar advisory service or a limited radar advisory service. A radar information service should only be given at the request of the pilot or when no other radar service is available.

2 Units

2.1 The area control centre (ACC) established in each FIR is to provide an area control service in the airspace under its jurisdiction. The FIR may be sub-divided into sectors to spread the work load of the controller.

2.2 Where no ACC is established the area control may be provided by the unit designated to provide approach control service in controlled airspace of limited extent.

3 Responsibilities

3.1 Area control is responsible for providing separation between aircraft operating in controlled airspace and advice to aircraft in advisory airspace. Air traffic control clearances to aircraft shall be based solely on the requirements for providing air traffic control services within such airspace.

3.2 The area within which radar services are provided is determined by the radar coverage of the equipment but may be further limited to areas defined in the unit operational manual.

Section 5 Area Services

Chapter 2 Area Control Procedures

1 Principles of Operation

The airspace under the jurisdiction of an area control centre may be divided into sectors which work in close liaison. The method of operation differs at each centre but will always be based on the following principles:

a) Each controller shall be responsible only for the efficient performance of those tasks which are specifically allocated in the task description. Tasks are detailed in the approved SSI Manual;

b) Controllers are to monitor the actions of other members of the sector team to the extent that prime duties permit;

c) Sectors must have a defined flight data display for the purpose of conflict detection which should at all time reflect all clearance, instructions and information as described in the unit SSI Manual.

Note: *A flight data display may be a surveillance display or a flight progress strip display as applicable.*

2 Co-ordination – Area Control Centres

2.1 Aircraft receiving an air traffic control or advisory service from one area control centre or sector shall not be permitted to penetrate the airspace of another area control centre or sector unless prior co-ordination has taken place. The responsibility for initiating co-ordination rests with the controller of the unit or sector transferring control, who shall comply with any conditions specified in the Letter of Agreement (LOA) between the units or by the accepting controller.

2.2 The complete process of co-ordination, which must precede transfer of control, has been achieved when:

a) Notification, negotiation and agreement has taken place progressively, i.e. step by step; *OR*

b) It has been agreed that an aircraft can proceed under specified conditions without the need for individual co-ordination. The principles of such agreements and controllers'

positions to which they apply shall be detailed in the unit operations manual and relevant LOAs and LOPs; *OR*

c) An estimate message has been passed and no objection has been raised by the accepting air traffic control unit.

2.3 Area Control units or sectors shall apply standardised procedures for the co-ordination and transfer of control of flights i.e. silent handoffs, in order to reduce the need for verbal co-ordination as far as practicable. Such co-ordination procedures shall conform to the procedures contained in the appropriate letters of agreement and SSI Manuals.

2.4 Estimates

2.4.1 The Area Control Unit or sector which will be transferring control of an aircraft shall pass the estimate for the aircraft's arrival at the transfer point to the next Area Control Unit or sector as soon as possible after take-off but not less than 10 minute prior to the aircraft entering the accepting units area of responsibility.

2.4.2 Estimates shall contain the following information and shall be passed in the following sequence:-

a) Aircraft call sign;

b) Position of entry;

c) Estimated time over entry point;

d) Flight Level (when aircraft will be climbing or descending this shall also be specified);

e) Transponder code;

f) Any additional information that is relevant or specified in the LOA between the units.

2.5 Revisions

Subsequent changes in flight level, routeing or revisions of estimates of 3 minutes or more are to be re-coordinated by the transferring controller and agreement reached before transfer of communication takes place.

2.6 Approval Requests

If the first reporting point after take-off is in an adjacent area or sector, an approval request must be made to that area control centre or sector and co-ordination achieved before clearance is given to the aircraft.

2.7 Transfer Points

2.7.1 Release or transfer of control between two adjacent ACC units/sectors will normally take place at the boundary between the two units/sectors or at points as prescribed in the SSI Manual. These will normally be:

a) Airway reporting point;
b) Waypoint at FIR boundary;
c) FIR/Common boundary or ETA for the FIR/Common boundary;
d) DR position;

2.7.2 Normally an area control unit or sector provides a service only to aircraft within its own FIR or area of responsibility, however, by prior arrangement between area control centres or sectors, the transfer point may be varied to suit traffic arrangements either permanently or for a particular flight.

2.7.3 In the absence of a request for the early transfer of communications, communications shall be transferred simultaneously with the transfer of control at the transfer point.

2.7.4 On receipt of a request for early transfer of communications, the Area Control Unit or sector in whose area of responsibility the aircraft is operating shall instruct the pilot to contact the next Area Control Unit or sector, giving the frequency on which contact is to be made. The transfer of control point shall be specified if the intention is to transfer control with the transfer of communication.

2.7.5 Area Control units or sectors may apply standardised procedures for the co-ordination and transfer of control of flights i.e. silent handoffs, in order to reduce the need for verbal co-ordination. Such co-ordination procedures shall conform to the procedures contained in the appropriate LOA and approved SSI Manual.

2.8 **Loss of Communications at Transfer Points**

The Area Control Unit or sector whose area of responsibility the aircraft is entering shall be responsible for initiating action to re-establish communication if the aircraft has not established communications within 5 minutes after the estimate received from the preceding Area Control Unit or sector; or within 5 minutes after notification as advised by the preceding Area Control Unit or sector when an early transfer of communications was requested.

2.8 **Transfer of Control**

2.8.1 Transfer of control of all flights shall be effected at the transfer point.

2.8.2 Unless communications were transferred before the aircraft reached the transfer point as in paragraph 2.6.2, the aircraft shall make a position report to the Area Control Unit or sector whose area of responsibility it is leaving when crossing such point or at the time estimated for the transfer point.

2.8.3 The Area Control Unit or sector shall acknowledge the report and instruct the aircraft to contact the next Area Control Unit or sector giving the frequency on which the contact shall be established.

2.8.4 Transfer of control between the various units shall exist once the traffic has entered the respective units' area of responsibility.

2.8.5 The unit releasing the aircraft shall ensure that the aircraft is clean from other traffic before the transfer of control is effected.

Note: *Clean shall mean that the aircraft is separated laterally, longitudinally or vertically from all other traffic and that the potential for a loss of separation does not exist. Units may further describe the limits and procedure applicable to the transfer of control between specific units in the SSI*

Manual.

3 Co-ordination – Approach Control Units

3.1 Arriving aircraft

3.1.1 Approach control units are required to keep area control promptly advised of the following regarding IFR flights:

a) Lowest level at the holding point available for use by area control;

b) Average time interval between successive approaches;

c) Revisions to expected approach times when calculations show a variation of 5 minutes or more;

d) Arrival times over the holding point if these vary from the estimate by 3 minutes or more;

e) Missed approaches when re-routing or a diversion is entailed, so that subsequent action is coordinated;

f) Departure times of aircraft;

g) All information on overdue aircraft;

h) Significant weather that may affect operations.

3.1.2 The passing of any of this information may be delegated from approach to aerodrome control or omitted by agreement with area control.

3.2 Departing Aircraft

3.2.1 Area control may specify a time at which, or a period between two times (a 'slot') during which, an aircraft is authorised to take-off. Units at aerodromes are to be advised of any anticipated delay to departing aircraft together with the reason.

3.2.2 A clearance expiry time shall be specified by the area control centre or sector if a delayed departure will conflict with traffic not released to the approach control unit. If, for traffic reasons of its own, a unit providing an approach control service, should specify in addition its own clearance expiry time, this shall not be later than that time specified by the area control centre or sector.

3.3 Release to Approach Control

3.3.1 A joining clearance from Approach in respect of approach units shall be obtained for every controlled flight which intends to enter a TMA/CTR. Such clearances should be requested at least 10 minutes ahead of the aircraft's estimated time of arrival over the release or transfer point as specified in the LOA between the units, so as to permit compliance with any restrictions.

3.3.2 When radar is not being used in the provision of ATS, ACC shall not descend traffic to the lowest level under the jurisdiction of the ACC unit until such time as APP reports that the flight level has been vacated.

3.3.3 Silent radar hand off procedures between radar sectors is covered in Section 7, paragraph 10.3.

3.3.4 As soon as possible after first contact, the Area Control Unit or sector shall pass the following information to the Approach unit in the following sequence:

"Estimate"

a) Aircraft call sign, type and SSR code (if applicable);

b) Point of departure and destination;

c) Release point;

d) Estimated time and level at the holding facility, or arrival time and level at holding facility if the release is given after the actual arrival over the facility;

e) Contact point (if applicable);

f) Any additional information that is relevant or specified in the LOA between the units.

3.3.5 When approach sequencing is in force at an aerodrome within controlled airspace, area control is to clear all aircraft to the holding facility. Where appropriate, holding instructions and an expected approach time are to be relayed to the affected traffic.

3.3.6 Aircraft proceeding to an aerodrome in Class G airspace will be instructed to leave controlled or advisory airspace under conditions as specified by the controller and provided with any known traffic.

3.3.7 Area control may, after co-ordination with approach control, clear an arriving aircraft to an aerodrome holding facility, or to a visual holding point, instead of the normal holding facility.

3.3.8 At aerodromes where standard instrument arrivals (STAR) have been established, arriving aircraft should normally be cleared to follow the appropriate STAR.

3.3.9 The aircraft shall be informed of the type of approach to expect and the runway in use as early as possible.

3.3.10 Approach will automatically assume control of an aircraft once the aircraft has passed the release point.

3.3.11 Approach will not inform Area Control when control has been assumed for each arriving aircraft, except that Approach shall advise Area Control of the arrival times of any aircraft at the release point which vary from the estimate by 3 minutes or more.

3.3.12 Area Control shall not release an aircraft to approach control before all other flights in the vicinity at lower levels have been released.

Note: *In this context 'vicinity' shall be interpreted as including all aircraft which are not longitudinally separated.*

3.3.13 Area Control may transfer an aircraft directly to an Aerodrome Control service and vice versa by prior agreement between the units concerned for the applicable part of Approach Control to be provided by either Area or Aerodrome control as applicable.

3.3.14 Transfer of communications shall be effected prior to or at the transfer point.

4 Loss of Communications

Area Control or Approach control shall be responsible for initiating action to re-establish communications if an aircraft transferred from either APP or ACC fails to establish contact within 3 minutes of the notification of transfer or the estimate given.

5 Procedures for Flights transiting through TMAs and CTRs.

5.1 Area Control shall coordinate those flights which will pass through a TMA or CTR with the responsible approach unit, at least 10 minutes before the flight's ETA at the TMA or CTR boundary.

5.2 Area Control shall obtain a clearance from the responsible approach control unit for the aircraft to fly through the TMA or CTR. ACC may request to retain communication with the aircraft therefore eliminating the need for the aircraft to change frequency.

5.3 When APP requires an over flying aircraft to be transferred to the approach frequency in order to coordinate that flight with other traffic in the TMA or CTR, Area Control shall release that aircraft to APP in the same manner as an arriving flight unless otherwise coordinated. When that aircraft vacates the TMA or CTR, APP will transfer that aircraft back to Area Control in the same manner as a departing flight unless otherwise coordinated.

6 Information to be given to an Aircraft on first Contact.

6.1 As soon as practicable after communication has been established, Area control shall pass to the inbound aircraft **in** the following sequence:-

a) Clearance into controlled airspace, where applicable;

b) Route clearance;

c) STAR where applicable;

d) Runway in use at destination;

e) Current weather at destination. (This may be confirming ATIS broadcast);

f) SIGMET information or hazardous weather reported by other pilots which may affect the aircraft;

g) Any unservicability at destination airfield or facilities which may affect the approach of aircraft;

h) Time check if holding is envisaged or an EAT/OCT will be issued. Should this requirement not exist at the time of first contact then a time check shall be passed as soon as this requirement develops.

7 Radar Separation

7.1 Unidentified Known Traffic

Radar separation minima are detailed in Section 6, Chapter 3. In addition, separation may be deemed to exist between aircraft under radar control or receiving radar advisory service and unidentified known traffic in the following circumstances:

a) When authorised procedures are in operation whereby the known traffic is under the control of another radar controller and separation can be maintained by direct co- ordination; or

b) When authorised procedures are in operation whereby track or vertical separation is deemed to exist.

5.2 Traffic Outside Radar Cover

5.2.1 In certain circumstances it may be necessary to apply procedural separation between an aircraft under radar control or receiving radar advisory service and known traffic outside of radar cover.

6 Speed Adjustment

Radar controllers may request pilots to increase/decrease speed in order to maintain the appropriate separation or for the purpose of flow management. Area may also use speed adjustment as a method to establish and maintain the initial sequencing of arriving aircraft. Such adjustments in speed should not be outside the speed ranges laid down in the SSI Manual. The pilot should be advised when speed control is no longer required.

Note 1: Refer to Separation Methods and Minima, Section 6, Chapter…paragraph 15.

Note 2: *The application of speed control over an extended period of time may affect aircraft fuel reserves.*

7 Aircraft off Track

Except when being vectored by radar, aircraft should report 'over' en-route reporting points as close as possible to the actual time of the event. If an aircraft reports 'abeam' instead of 'over' a position, air traffic control must ensure that the aircraft is aware of its correct routing and that separation is not adversely affected.

8 Position Reports

8.1 In order to reduce RTF communication, a pilot will make a position report only:

a) On first transfer of communication from another centre or sector. This report will contain aircraft callsign and flight level only. Subsequent reports will contain aircraft callsign, position and time;
b) On reaching the limit of the ATC clearance; or
c) When instructed to by air traffic control.

8.2 Controllers are to instruct pilots to make position reports:

a) When the aircraft is outside radar cover;

b) Before radar identification has been achieved; and

c) As detailed in unit operations manual.

9 Aircraft Crossing and Joining

9.1 Flight data regarding aircraft requiring to cross or join airways or advisory routes may be obtained from flight plans or aircraft RTF in-flight requests. The latter may be made direct on the appropriate area control sector frequency or via personnel providing a FIS at an ACC.

9.2 In-flight requests will provide the following:

a) Crossing Flights:

• Aircraft identification and type;

• Position and heading;

• Flight level and flight rules status;

• Crossing position;

• Requested crossing level and estimate for crossing position.

b) Joining Flights:

• Aircraft identification and type;

• Position and heading;

• Flight level and flight rules status;

• Departure airfield;

• Estimated time at entry point;

• Route and point of first intended landing;

• True airspeed; (if applicable)

• Desired level on airway or advisory route.

9.3 Receipt of flight plan data does not constitute a clearance, except that when air traffic control has acknowledged receipt of the information from an aircraft in flight and radio failure occurs before a clearance can be transmitted, the aircraft may be expected to proceed in accordance with the flight plan. Aircraft should be given a clearance in reply to an in-flight request, but if this is not possible the aircraft are to be advised when to expect clearance and given a time check.

9.4 In considering requests for crossing or joining clearances it should be remembered that an aircraft already cleared to operate at a level within controlled airspace has prior claim to that level.

9.5 Pilots of aircraft that cannot comply with the full IFR are permitted to request clearances to cross airways in VMC by day. Controllers, however, are to handle these requests as though they are IFR flights.

11 Aircraft Holding

11.1 When an aircraft is instructed to hold en-route or at a location or aid other than the initial approach fix it shall be given an expected onward clearance time (OCT) to leave the holding ~~point~~ ***fix***. Aircraft must never be told that such holding is indefinite, and if it is not possible to make an accurate calculation immediately, the aircraft may be told that the "delay is undetermined" and the aircraft shall be given and OCT within (10) minutes of being instructed to hold.

Note: *"Onward clearance time" is the time at which an aircraft can expect to leave the point at which it is being held.*

11.2 Aircraft which will be delayed before commencing an intermediate approach for landing shall be given an expected Approach Time (EAT) together with their clearance to the holding facility. If an aircraft is likely to be delayed less than 20 minutes no EAT is to be passed.

11.3 Approach control shall give 10 minutes prior notification to ACC, when holding is required at or within the TMA lateral limits.

11.4 When radar is being used in the provision of ATS and aircraft are held close to the transfer point with Approach, ACC shall not transfer traffic to APP until such time as the aircraft's radar control service has been reinstated and is 10NM or greater from the holding pattern.

12 Diversion

12.1 When a diversion is requested, the ACC shall:

a) Provide the aircraft with a diversion message containing the latest weather information, clearance instructions, radio frequencies to be used, etc.;

b) Provide full information to the diversion aerodrome, including details of the aircraft, its clearance instructions etc;

c) Inform original destination aerodrome of the diversion action;

d) Notify adjacent ATSUs who will be affected and coordinate clearance as required with those units.

13. Cruise Climb

At the request of the pilot an aircraft may be cleared to cruise climb above or between specified levels. During cruise climb the vertical speed of the aircraft will be much less than the normal for that type of aircraft. This should be considered before cruise climb is approved.

14. Minimum Flight Levels

Unless specifically authorised cruise levels that are below the minimum IFR level for a specific route or route segment shall not be assigned.

15. Air Traffic Advisory Service

15.1 An area control unit is responsible for the provision of an advisory service, as well as an alerting service and assistance to organisations involved in SAR in the advisory airspace within the jurisdiction of its ACC.

15.2 The procedures for providing an advisory service are the same as those for providing an area control service with the exception of action required by a radar controller when an unknown aircraft appears.

15.2.1 When a non-radar advisory service is being provided no attempt shall be made, unless so prescribed by the CAA, to take into account any aircraft which is not maintaining continuous communication. The exception is a known radio failure aircraft for which normal radio failure procedures, as described in Section 5, shall apply.

15.2.2 When a non-radar advisory service is being provided, no attempt shall be made to separate aircraft flying in advisory airspace from others flying outside controlled or advisory airspace, unless such aircraft have been cleared to cross or join advisory airspace.

15.3 Area control units may provide radar information services to flights operating outside controlled and advisory airspace to the extent permitted in the unit operations manual.

Section 5 Area Services

Chapter 3 Flight Information Service

1 Provision of Service

1.1 Flight information service (FIS) and alerting service shall be provided

a) Within a FIR by a Flight Information Centre (FIC) or an ACC; and

b) Within controlled airspace and at controlled aerodromes by the relevant air traffic control units.

1.2 Flight information shall be provided to all aircraft likely to be affected by the information and consists of information on:

a) Collision hazards with known traffic (class C and G);

b) Weather conditions (reported or forecast at departure, destination and alternate aerodromes and METAR and SPECI etc);

c) Changes in serviceability of facilities (Communication, Navigation, and aerodrome);

d) Changes in condition of aerodrome facilities such as manoeuvring area when it is affected by snow, ice or depth of water;

e) Release into the atmosphere of radio active material or toxic chemicals;

f) Unmanned free balloons;

g) Any other information likely to affect the safe operation of aircraft;

h) For flight over water as far as practicable and when requested by the pilot, information about surface vessels in the area.

Note 1: *Flight information does not relieve the pilot of any responsibilities.*

Note 2: *Information in a) is passed as it is known to ATS and may sometimes be incomplete or inaccurate and ATS can not assume responsibility for its issuance.*

1.3 Relevant meteorology information received via pilot reports that may affect other aircraft shall be passed to such aircraft, the Metrological office and other ATSUs as applicable for as long as the conditions reported is known to exist.

1.4 Flight information service shall pass known weather information along the route that may make VFR operation impractical to VFR aircraft.

1.5 Flight Information Service in class G airspace may be provided by suitable rated Air Traffic Service Assistants (ATSAs). ATSAs providing a flight information service can do so from dedicated positions and on discrete frequencies. This service is provided within airspace and during periods which are notified in the SA- AIP.

1.6 The guidance in this chapter applies to ATSAs and ATCs but, for simplicity, the text will refer only to controllers providing a FIS at ACCs.

1.7 Where a unit provides both a control service and flight information service the provision of the control service shall take preference.

1.8 Where controllers are engaged in providing both a control service and an information service, controllers shall distinguish between their air traffic control and flight information service roles when carrying out co-ordination.

1.9 Flight information service shall be responsible for providing an alerting service and assistance to organisations involved in SAR.

2. Recording and Transmission of Information on the Progress of Flights

Information on the actual progress of flights, including those of heavy or medium unmanned free balloons, under neither air traffic control service nor air traffic advisory service shall be:

a) Recorded by the air traffic services unit serving the FIR within which the aircraft is flying in such a manner that it is available for reference and in case it is requested for search and rescue action;

b) Transmitted by the air traffic services unit receiving the information to other air traffic services units concerned.

3. Co-ordination Between ATS Units Providing Flight Information Service

3.1 Co-ordination between ATS units providing flight information service in adjacent FIRs or sectors shall be effected in respect of all flights, in order to ensure continued flight information service to such aircraft in specified areas or along specified routes. Such co-ordination shall be effected in accordance with an agreement between the ATS units concerned.

3.2 Where co-ordination of flights is effected it shall include transmission of the following information of the flight concerned;

a) Appropriate items of the current flight plan; and

b) The time at which last contact was made with the aircraft.

3.3 This information shall be forwarded to the air traffic services unit in charge of the next FIR or sector in which the aircraft will operate prior to the aircraft entering such FIR or sector.

4 Transfer of Responsibility for the Provision of Flight Information Service.

The responsibility for the provision of FIS to a flight normally passes from the appropriate ATS unit in an FIR or sector to the appropriate ATS unit in the adjacent FIR or sector at the time of crossing the common FIR or sector boundary, However, when co-ordination is required, but communication facilities are inadequate, the former ATS unit shall, as far as practicable, continue to provide flight information service to the flight until it has established two way communication with the appropriate ATS unit in the FIR or sector it is entering.

5 Transmission of Information

5.1 Means of Transmission

5.1.1 Information shall be transmitted to an aircraft by one or more of the following means;

a) Direct transmission by the appropriate ATS unit to an aircraft, ensuring that receipt is acknowledged;

b) A general call, an unacknowledged transmission to all aircraft concerned;

c) Broadcast; or

d) Data link.

Note: *It should be recognised that in certain circumstances, e.g. during the last stages of a final approach, it may be impracticable for aircraft to acknowledge directed transmissions.*

5.1.2 The use of general calls shall be limited to cases where it is necessary to disseminate essential information to several aircraft without delay, e.g. the sudden occurrence of hazards or the failure of a key approach and landing aid at the destination aerodrome.

5.2 Transmission of Special Air Reports, SIGMET and AIRMET Information

5.2.1 Appropriate SIGMET and AIRMET information, as well as special air reports which have not been used for the preparation of a SIGMET, shall be disseminated to aircraft by one or more of the means specified in paragraph 5.1.1.

5.2.2 The special air report, SIGMET and AIRMET information to be passed to aircraft should cover a portion of the route up to one hour's flying time ahead of the aircraft.

5.3 Transmission of SPECI and Amended TAF

5.3.1 Special reports in the SPECI code form and amended aerodrome forecasts shall be transmitted on request and supplemented by:

a) Direct transmission from the air traffic services unit to the aircraft of selected special reports and amended aerodrome forecasts for the departure, destination and its alternate aerodromes, as listed in the flight plan; or

b) A general call on the appropriate frequencies for the unacknowledged transmission to affected aircraft of selected special reports and amended aerodrome forecasts; or

c) Continuous or frequent broadcast or the use of data link to make available current aerodrome reports and forecasts.

5.3.2 The passing of amended aerodrome forecasts to aircraft on the initiative of the appropriate air traffic services unit should be limited to that portion of the flight where the aircraft is within a specified time from the aerodrome of destination.

5.4 Transmission of Information to Aircraft

5.4.1 The following information shall be available at appropriate ACCs for aerodromes and shall be transmitted on request to aircraft prior to commencement of descent:

a) Current meteorological reports and forecasts, except that where communication difficulties are encountered under conditions of poor propagation, the elements transmitted may be limited to:

i. Mean surface wind, direction and speed (including gusts);

ii. Visibility or runway visual range;

iii. Amount and height of base of low clouds;

iv. Other significant information;

v. If appropriate, information regarding expected changes;

b) Operationally significant information on the status of facilities relating to the runway in use;

c) Sufficient information on the runway surface conditions to permit assessment of the runway braking action.

5.4.2 Traffic information relating to collision hazard with known traffic should include adequate information to the pilots to enable them to determine the relative movement of aircraft in relation to each other with reasonable accuracy. Traffic information should include the relevant parts of information as is required by the tactical situation at the time to meet the above objective as close as possible. This information is:

a) Type of aircraft (wake turbulence classification if deemed necessary, colour and markings);

b) Direction of flight (Approximate track or heading, departure point and destination, relative movement in relation to the aircraft being addressed;

c) Level information (level maintaining, climbing/descending and level passing);

d) Estimates for points along the route;

e) Intensions of the aircraft;

f) Speed if deemed necessary

6 Limiting Factors

6.1 Factors which limit the air traffic services given by controllers providing a FIS include the following:

a) Civil and military aircraft may fly on random tracks with consequent multiplicity of reporting points;

b) Communication with the appropriate ACC is not mandatory *for VFR flights*;

c) Absence of accurate navigation and associated position fixing may cause unreliable position reporting and estimates;

d) The size of the sectors makes it difficult for controllers to be aware of the many geographic locations used and their proximity to each other;

e) Even when flight plan information is known to the controller he frequently has no indication as to whether such aircraft are adhering to planned routes, altitudes and timings;

f) RTF coverage may not be available in all parts of the unit's airspace.

6.2 Because accurate assessment of collision risk is doubtful, it is recognised that no form of positive control or separation service can be provided.

7 Proximity Warnings

When it is self evident from the amount and accuracy of the information presented by pilots in receipt of a FIS, controllers, when practicable, should provide a supplementary service of warnings related to the proximity of the subject aircraft. In particular, warnings should be issued to aircraft which are, or may become, in dangerous proximity to each other. For other situations, controllers may inform a pilot of the presence or absence of traffic as indicated to them. It is recognised that the provision of proximity warnings and traffic information may be based on data of doubtful accuracy and completeness. The decision to make any alteration to the flight remains with the pilot and traffic avoidance advice shall not be issued.

Note: *Aircraft that will pass closer that 10 NM in the case of a radar service or 10 min in the case of a non-radar service and less that 1000ft apart vertically may be considered as passing in each others proximity.*

8 Map Display

8.1 Suitable map displays of the concerned area shall be provided at the positions from which a Flight Information Service is being provided. Unit procedures and documentation shall ensure that the following information affecting the area is marked on the map displays.

a) Any airspace restrictions of a temporary nature;

b) Unusual aerial activities;

c) Procedure that will be applicable to that airspace (i.e. Instrument Approach Procedures).

9 Aircraft Joining or Crossing

When a pilot in receipt of a FIS requests permission from a controller at an ACC to join or cross controlled or advisory airspace the controller shall either:

a) Obtain the clearance from the appropriate ATSU and pass it to the pilot; or

b) Inform the pilot that he should change frequency in time to make the request direct to the appropriate ATSU.

10 Liaison with Aerodromes

Controllers shall distinguish between their air traffic control and flight information service roles when communicating with aerodrome air traffic service units and shall not exercise positive control over flights in receipt of a FIS only.

11 Use of Radar in the Flight Information Service

11.1 The use of radar in the provision of flight information service does not relieve the pilot-in-command of an aircraft of any responsibilities, including the final decision regarding any suggested alteration of the flight plan.

11.2 Radar derived information for the purpose of providing FIS shall not be used unless the ATMSD personnel providing the service are appropriately qualified in the use of radar.

11.3 The information presented on a radar display may be used to provide identified aircraft with:

a) Information regarding any aircraft observed to be on a conflicting path with the radar identified aircraft regarding avoiding action;

b) Information on the position of significant weather and, if practicable, advice to the aircraft on how best to circumnavigate any such areas of adverse weather.

c) When radar is used in controlled airspace and the aircraft is vectored for circumnavigating any area of adverse weather, the radar controller should ascertain as to whether the aircraft can be returned to its intended or assigned flight path within the available radar coverage, and, if this does not appear possible, inform the pilot of the circumstances.

d) Attention must be given to the fact that under certain circumstances the most active area of adverse weather may not show on the radar display.

e) Information to assist the aircraft in its navigation.

Section 6 Separation Methods and Minima

Chapter 1 General

1 Introduction

1.1 This chapter contains procedures and procedural separation minima for use in the separation of aircraft in the en route phase as well as aircraft in the arrival and departure phases of flight.

2 Provision of Standard Separation

Standard vertical or horizontal separation shall be provided, unless otherwise specified, between:

a) All flights in Class A and B airspace;

b) IFR flights in Class C, D and E airspace;

c) IFR flights and VFR flights in Class C airspace;

d) IFR flights and special VFR flights in Class C airspace;

e) Special VFR flights in Class C airspace;

f) IFR flights in Class F as far as Practical ;

g) IFR flights in Class A and C airspace and known IFR flights operating up to 10NM outside of the boundaries of such airspace;

3 Increased Separation

3.1 Separation standards are minima and shall be increased when:

a) Requested by the pilot.

b) A controller considers it necessary.

c) Specified in the station standing instruction manual.

d) Aircraft is being subjected to unlawful interference.

e) Aircraft experiences navigational difficulties or other relevant emergencies.

3.1 **Fuel Dumping**

3.1.1 Other known traffic should be separated from the aircraft dumping fuel by:

a) At least 10 NM horizontally, but not behind the aircraft dumping fuel;

b) Vertical separation if behind the aircraft dumping fuel within 15 minutes flying time or a distance of 50 NM by;

c) At least 1 000 ft if above the aircraft dumping fuel; and

d) No aircraft are allowed to be below the aircraft dumping fuel.

e) The horizontal boundaries of the area within which other traffic requires appropriate vertical separation extend for 10 NM either side of the track flown by the aircraft which is dumping fuel, from 10 NM ahead, to 50 NM or 15 minutes along track behind it (including turns).

f) When possible, a specific sterile area should be assigned for fuel dumping, however, this should not take place below 3000 AGL.

3.2 Fuel dumping should be done with due regard to all relevant factors so as to avoid impeding the flow of air traffic by the application of excessive separations.

4 Reduced Separation

4.1 Standard separation may be reduced when authorised by the Civil Aviation Authority and published in the station standing instruction manual.

4.2 In the vicinity of aerodromes, the standard separation minima may be reduced if:

a) Adequate separation can be provided by the aerodrome controller when each aircraft is continuously visible to this controller;

b) Each aircraft is continuously visible to flight crews of the other aircraft concerned and the pilots thereof report that they can maintain their own separation;

c) In the case of one aircraft following another, the flight crew of the succeeding aircraft reports that the other aircraft is in sight and separation can be maintained.

4.3 Clearances to fly maintaining own separation while in visual meteorological conditions, provided:

a) It is requested by the pilot;

b) The aircraft concerned are operating in VMC;

c) Can maintain VMC during the period in which separation is reduced;

d) It is used in controlled airspace by day only;

e) The other aircraft agree to the reduced separation; and

f) The clearance shall be for a specified portion of the flight at or below 10 000 ft AMSL, during climb or descent.

4.3.1 Then providing clearances to maintain own separations and VMC, the controllers shall use the phrase—maintain own separation and VMCll.

4.3.2 If there is a possibility that flight under VMC may become impracticable, an IFR flight shall be provided with alternative instructions to be complied with in the event that VMC cannot be maintained for the term of the clearance.

4.4 **Emergencies**

4.4.1 If, during an emergency situation, it is not possible to ensure that the applicable horizontal separation can be maintained, emergency separation of half the applicable vertical separation minimum may be used, i.e. 500 ft between aircraft in airspace where a vertical separation minimum of 1 000 ft is applied, and 1 000 ft between aircraft in airspace where a

2 000 ft vertical separation minimum is applied.

4.4.2 When emergency separation is applied the flight crews concerned shall be advised that emergency separation is being applied and informed of the actual minimum used.

4.5 SAAF operations (military aircraft).

4.6 Formation flights when these have been pre-arranged by the pilots concerned.

4.7 In every case where standard separation is reduced, Essential Traffic Information shall be passed.

5 Loss of Separation

5.1 If, for any reason, a controller is faced with a situation in which two or more aircraft, or an aircraft and an obstruction, or an aircraft and terrain are separated by less the prescribed minima (for example, air traffic control errors or differences in the pilot's estimated and actual times over reporting points) he is to:

a) Use every means at his/her disposal to obtain the required minimum separation with the least possible delay, and

b) Pass essential traffic information as soon as possible,

5.2 Whenever, as a result of failure or degradation of navigation, communications, altimetry, flight control or other systems, aircraft performance is degraded below the level required for the airspace in which it is operating, the flight crew shall advise the controller without delay. Where the failure or degradation affects the separation minimum currently being employed, the controller shall take action to establish another appropriate type of separation or separation minimum.

5.3 ACAS Deviations

5.3.1 When a pilot reports a manoeuvre induced by an ACAS resolution advisory (RA), the controller shall not attempt to modify the aircraft trajectory until the pilot reports returning to the terms of the current air traffic control instruction or clearance but shall provide traffic information as appropriate.

5.3.2 Once an aircraft departs from its clearance in compliance with a resolution advisory, the controller ceases to be responsible for providing separation between that aircraft and any other aircraft affected as a direct consequence of the manoeuvre induced by the resolution advisory. The controller shall resume responsibility for providing separation for all the affected aircraft when:

Separation has been re-established for all affected aircraft.

5.3.3 Following an RA event, or other significant ACAS event, pilots and controllers should complete an air traffic incident report.

6 Essential Traffic Information

6.1 Essential traffic is traffic which is separated for any period by less than the specified standard separation.

a) Direction of flight of conflicting aircraft;

b) Type and wake turbulence category of conflicting aircraft;

c) Cruising level of conflicting aircraft and ETA for the reporting point, or for aircraft passing through the level of another with less than the normal separation; the ETA for the nearest or next reporting point nearest to where the aircraft will cross levels;

d) Relative bearing of the aircraft concerned in terms of the 12-hour clock as well as the distance from the conflicting traffic;

e) Any alternative clearance.

7 Types of Separation

7.1 Separation is divided into the following types:

a) Vertical;

b) Horizontal;

I. Lateral.

II. Longitudinal.

III. ATS Surveillance System.

Section 6 Separation Methods and Minima

Chapter 2 Vertical Separation

1 Vertical Separation

1.1 Vertical separation is obtained by requiring aircraft using prescribed altimeter setting procedures to operate at levels expressed in terms of flight levels or altitude in accordance with the provisions in ATS Surveillance System and aerodrome control procedures.

1.2 **Vertical Separation Minima**

Vertical separation exists when the vertical distance between aircraft is never less than the prescribed minimum. The vertical separation minima are:

a) 1,000 ft up to FL 290 between all aircraft;

b) 1,000 ft between FL290 and FL410 between RVSM approved Aircraft only;

c) 2,000 ft between FL 290 and FL410 between non-RVSM approved aircraft and any other aircraft;

d) 2,000 ft between all aircraft above FL410 .

1.3 Controllers are to assess the vertical distance between aircraft by observing the secondary ATS Surveillance System Mode C responses in accordance with the conditions for the use of Mode C specified in Chapter 5 or by obtaining level reports from pilots.

Only RVSM approved aircraft will be permitted to operate in RVSM airspace within the South African area of responsibility (FAJA, FACA and FAJO FIRs)

Only after prior coordination with the appropriate ATC centres will state aircraft (military, police and customs) that are not RVSM approved be cleared to operate within RVSM airspace within the South African area of responsibility. Two thousand feet (2000 ft) vertical separation will be applied between such aircraft and any other aircraft.

1.4 Should it become necessary to suspend RVSM operations vertical separation and the semi-circular rule shall be applied as per the following table:

Contingency Cruising levels as per direction of flight – FL280 to FL430	
Route from 180 degrees to 359 degrees	Route from 000 degrees to 179 degrees
EVENS	ODDS

FL430	(non RVSM level above RVSM airspace)
	FL410
FL380	
	FL350
FL320	
	FL290

FL280	(non RVSM level below RVSM airspace)

When RVSM has been suspended, the period of time for which RVSM have been suspended, specific flight levels and the geographic area of the suspension will be coordinated with adjacent ACCs.

Appropriate flow control procedures, as required should be instituted by the affected ACCs.

2 Changing Levels

2.1 Aircraft may be instructed to change level at a specified time, place or rate.

2.2 An aircraft may be cleared to a level previously occupied by another aircraft after the latter has reported vacating it, except when:

a) Severe turbulence is known to exist; or

b) The higher aircraft is effecting a cruise climb; or

c) The difference in aircraft performance is such that less than the applicable separation minimum may result; or

d) The aircraft concerned are established in the same holding pattern.

2.3 In these cases such clearance shall be withheld until the aircraft vacating the level has reported at or passing another level separated by the required minimum.

2.4 Pilots in direct communication with each other may, with their concurrence, be instructed to maintain a specified separation between aircraft during climb or descent.

3 Vertical Speed Control Instructions

3.1 In order to facilitate a safe and orderly flow of traffic, aircraft may be instructed to adjust rate of climb or rate of descent. Vertical speed control may be applied between two climbing aircraft or two descending aircraft in order to establish or maintain a specific vertical separation minimum.

3.2 Vertical speed control shall not be applied between aircraft entering or established in a holding pattern.

3.3 Vertical speed adjustments should be limited to those necessary to establish and/or maintain a desired separation minimum. Instructions involving frequent changes of climb/descent rates should be avoided.

3.4 The flight crew shall inform the ATC unit concerned if unable, at any time, to comply with a specified rate of climb or descent. In such cases, the controller shall apply an alternative method to achieve an appropriate separation minimum between aircraft, without delay.

3.5 Aircraft shall be advised when a rate of climb/descent restriction is no longer required.

Methods of application:

a) An aircraft may be instructed to expedite climb or descent as appropriate to or through a specified level, or may be instructed to reduce its rate of climb or rate of descent.

b) Climbing aircraft may be instructed to maintain a specified rate of climb, a rate of climb equal to or greater than a specified value or a rate of climb equal to or less than a specified value.

c) Descending aircraft may be instructed to maintain a specified rate of descent, a rate of descent equal to or greater than a specified value or a rate of descent equal to or less than a specified value.

d) In applying vertical speed control, the controller should ascertain to which level(s) climbing aircraft can sustain a specified rate of climb or, in the case of descending aircraft, the specified rate of descent which can be sustained, and shall ensure that alternative methods of maintaining separation can be applied in a timely manner, if required.

3. Controllers need to be aware of aircraft performance characteristics and limitations in relation to a simultaneous application of horizontal and vertical speed limitations.

4 Horizontal Separation

4.1 An _exact reporting point‘ is a position established by a navigational facility which is:

a) Overhead a VOR.

b) Overhead an NDB.

b) A position which has been notified as a reporting point and which is established by the intersection of VOR radials.

c) A position which has been notified as a reporting point and which is established by the intersection of a VOR radial and a bearing from a NDB.

d) A position established by a VOR radial combined with a range from a co-located DME.

e) A recognised and published RNAV reporting point.

Section 6 Separation Methods and Minima

Chapter 3 Lateral Separation

1 General

1.1 Lateral separation shall be applied so that the distance between aircraft is never less than a specified amount. It is achieved by requiring aircraft to fly on different tracks or in different geographical locations as determined by visual observations, the use of navigational aids or by the use of area navigation (RNAV) equipment.

1.2 Communication must be maintained with the aircraft concerned throughout the period that measured distance values are being used to achieve separation. Separation is to be checked by obtaining simultaneous DME readings from aircraft at intervals of not more than 10 minutes.

1.3 Where measured distance values are used, each aircraft must be using the same ‗on track' VOR/DME facility i.e. it means that the aircraft is flying either directly inbound to or directly outbound from the station.

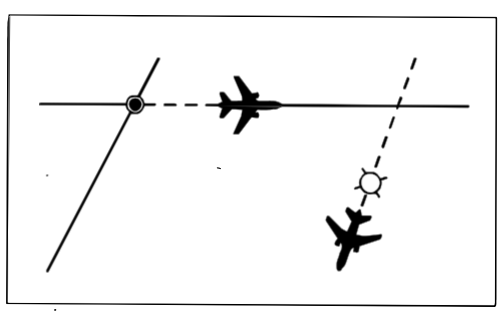
1.4 VOR/DME separation criteria are based on the condition that a VOR and its associated DME station are co-located (600 metres).

1.5 Aircraft must be within the designated operational coverage (protected range) of a VOR or a NDB.

1.6 **Geographical Separation**

1.6.1 This separation is only to be used in specific instances as authorised by the relevant authority and published in the appropriate documentation.

1.6.2 Such a separation shall be referred to as a ―deemed separation‖ and shall be supported on merit by a safety case.



2 Lateral Separation on Departure or En-route; Both Aircraft Outbound Using VOR radials.

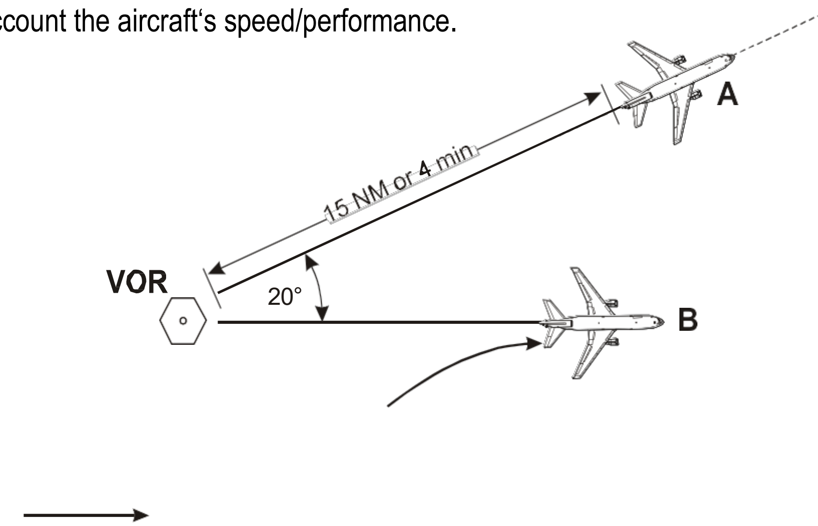
2.1 Separation is established when;

a) Both aircraft have reported established on radials which diverge by 20 degrees or more;

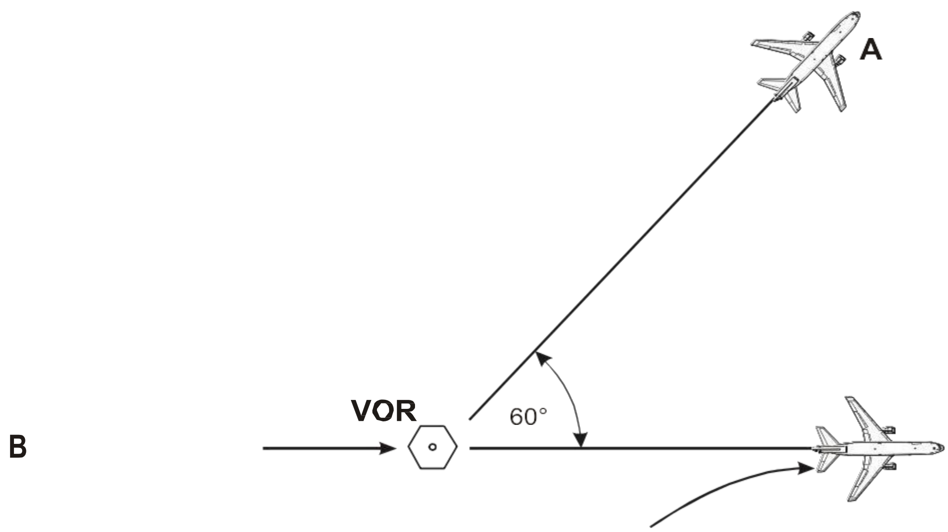
b) One aircraft is the time equivalent of 15 NM or 4 minutes(whichever is the greater) based on the speed of 225kts from the VOR; and

c) Where only one aircraft has departed from the aerodrome where the VOR is situated, or passed overhead the VOR en-route facility, the time equivalent of 15 NM or 4 minutes(whichever is the greater) based on the speed of 225kts shall be based on the aircraft which departed from the aerodrome where the VOR is situated or passed overhead the VOR facility; and

d) If the aircraft's speed is less than 225kts, additional time shall be added to take into account the aircraft's speed/performance.



2.2 Separation is established when both aircraft have reported established on radials which diverge by 60 degrees or more.



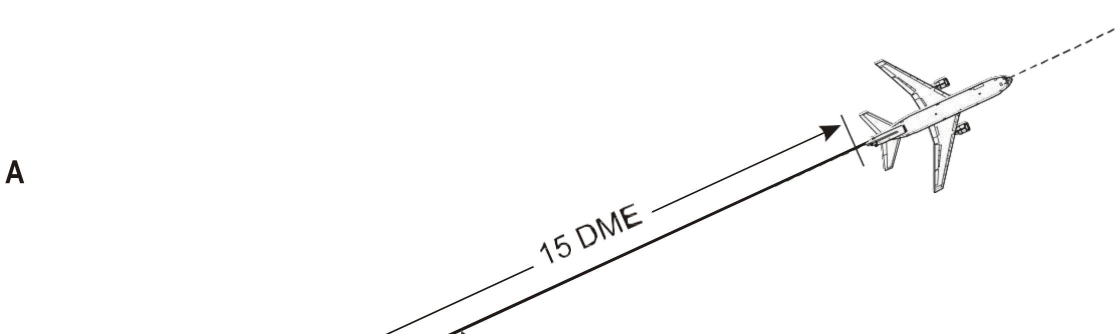
3 Lateral Separation on Departure or En-route; Both Aircraft Outbound Using VOR radials and a co-located DME station.

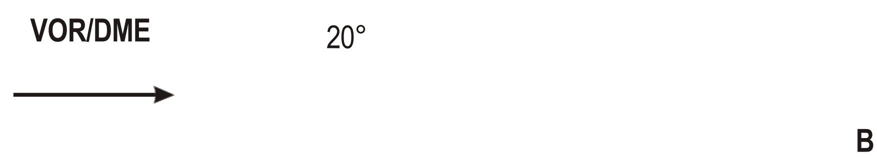
3.1 Separation is established when;

a) Both aircraft report established on radials which diverge by 20 degrees or more; and

b) One aircraft is at least 15 DME from the VOR station; and

c) At least one aircraft has departed or passed overhead the VOR facility.



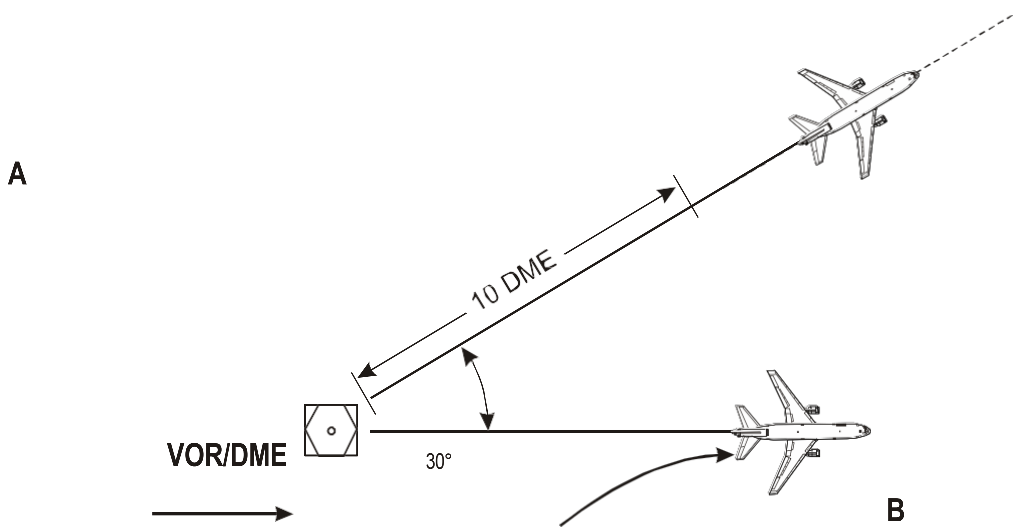


3.2 Separation is established when;

a) Both aircraft report established on radials which diverge by 30 degrees or more; and

b) One aircraft is 10 DME from the VOR station; and

c) At least one aircraft has departed or passed overhead the VOR facility.



4 Lateral Separation for Departure or En-route; Both Aircraft Outbound Using An NDB

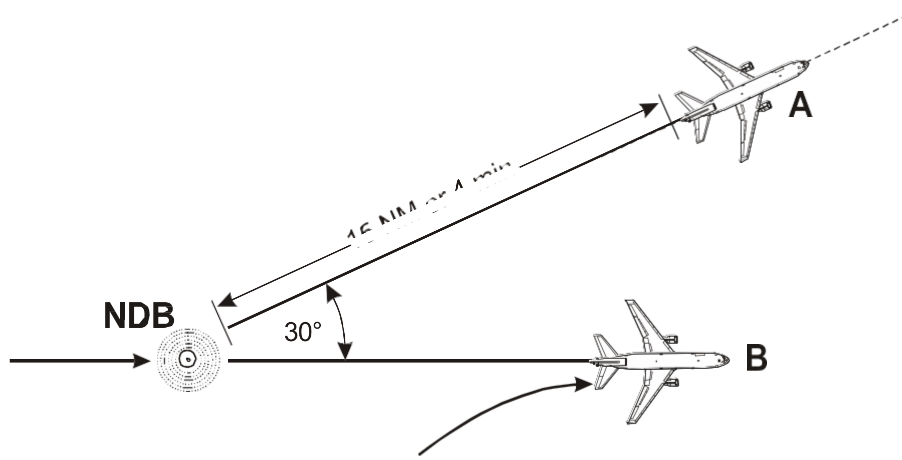
4.1 Separation is established when;

a) Both aircraft have reported established on tracks which diverge by 30 degrees or more;

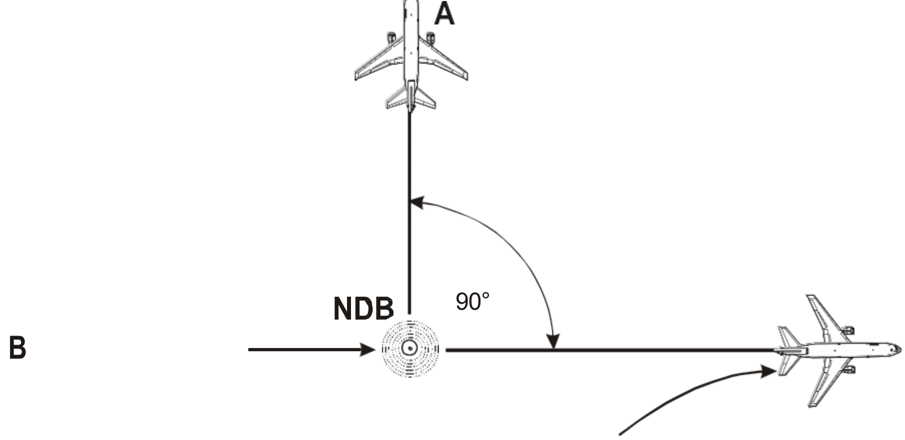
b) One aircraft is the time equivalent of 15 NM or 4 minutes based on the speed of 225kts from the NDB; and

c) Where only one aircraft has departed from the aerodrome where the NDB is situated, or passed overhead the NDB en-route facility, the time equivalent of 15 NM or 4 minutes (whichever is the greater) based on the speed of 225kts shall be based on the aircraft which departed from the aerodrome where the NDB is situated or passed overhead the NDB facility; and

d) If the aircraft speed is less than 225 kts, additional time shall be added to take into account the aircraft speed/performance.



4.2 Separation is established when both aircraft report established on tracks which diverge by 90 degrees or more.

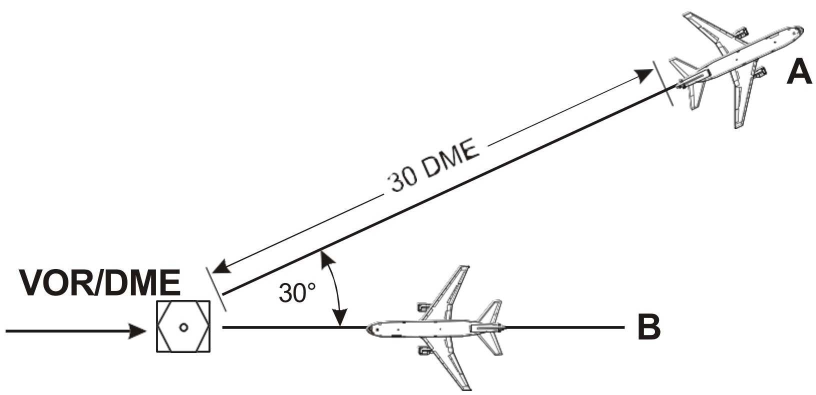


5 Lateral Separation between Aircraft Inbound and Outbound Using VOR radials and a Co- located DME Station.

5.1 Separation is established when;

a) Both aircraft report established on radials at least 30 degrees apart; and

b) The outbound aircraft has reported at least 30 DME outbound from the VOR station.



5.2 Separation is established when;

a) Both aircraft report established on radials at least 60 degrees apart; and

b) The outbound aircraft has reported at least 15 DME outbound from the VOR station.

VOR/DME 60°

B

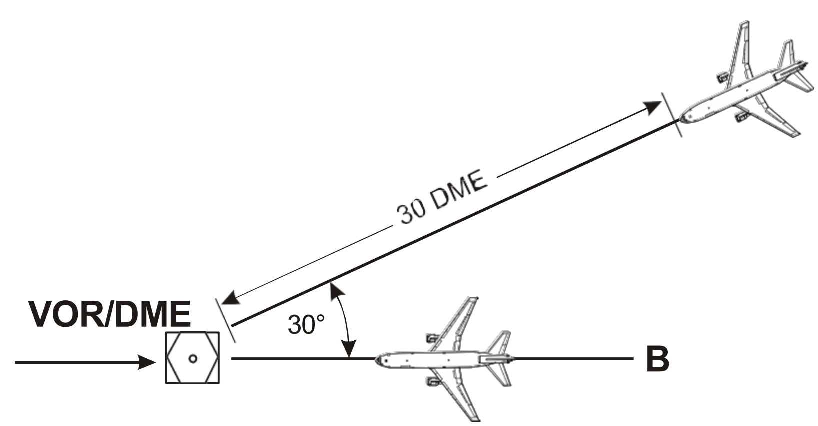
6 Lateral Separation When Both Aircraft Are Inbound Using VOR radials and a Co-located DME Station.

6.1 Separation is established when;

a) Both aircraft report established on radials 30 degrees apart; and

b) One aircraft is at least 30 DME from the VOR station.

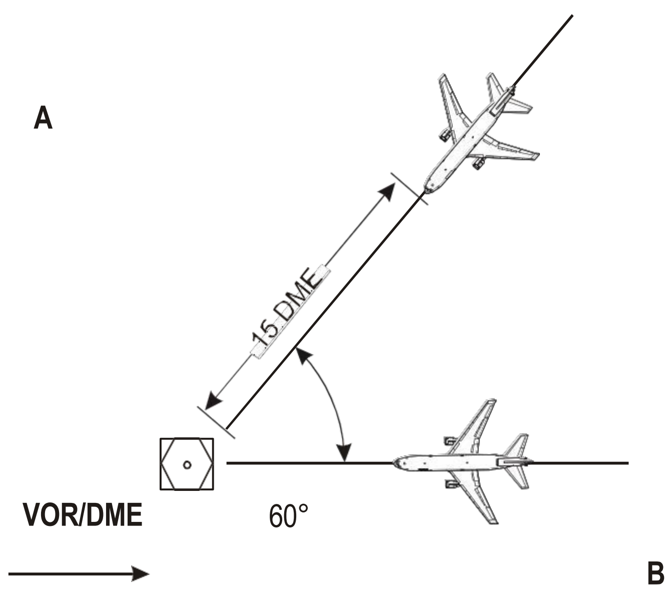
A



6.2 Separation is established when;

a) Both aircraft report established on radials 60 degrees apart; and

b) One aircraft is at least 15 DME from the VOR station.



7 RNAV Operations

7.1 Separation is established when;

a) Both aircraft are established on tracks which diverge by at least 15 degrees; and

b) The protected airspace associated with the track of one aircraft does not overlap with the protected airspace associated with the track of the other aircraft.

7.2 This is determined by applying the angular difference between two tracks and the appropriate protected airspace value. The derived value is expressed as a distance from the intersection of the two tracks at which lateral separation exists.

7.3 **RNAV operations where RNP is specified on parallel tracks or ATS routes**

7.3.1 Within designated airspace or on designated routes, where RNP is specified, lateral separation between RNAV-equipped aircraft may be obtained by requiring aircraft to be established on the centre lines of parallel tracks or ATS routes spaced at a distance which ensures that the protected airspace of the tracks or ATS routes does not overlap.

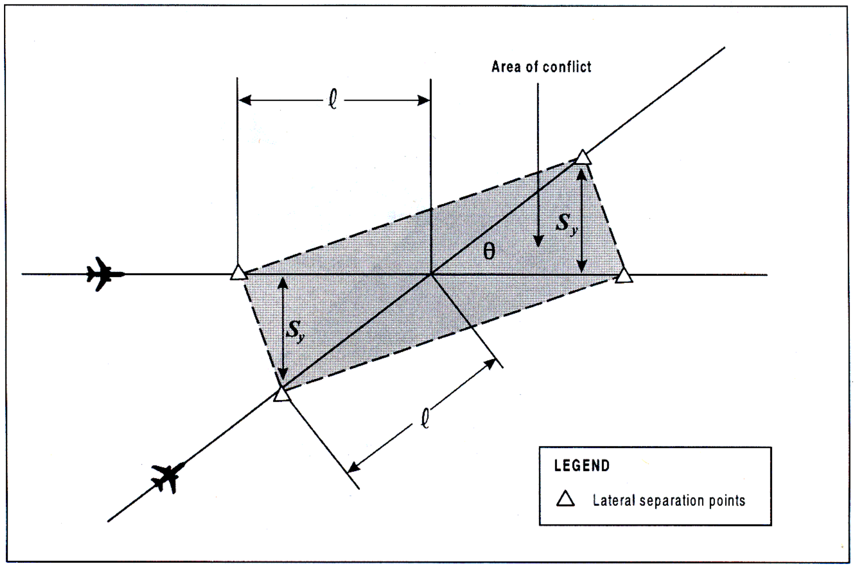
7.3.2 The spacing between parallel tracks or between parallel ATS route centre lines for which an RNP type is required will be dependent upon the relevant RNP type specified.

7.4 **RNAV operations (where RNP is specified) on intersecting tracks or ATS routes**

7.4.1 The use of this separation is limited to intersecting tracks that converge to or diverge from a common point at angles between 15 and 135 degrees.

7.4.2 For intersecting tracks, the entry points to and the exit points from the area in which lateral distance between the tracks is less than the required minimum are termed lateral separation points. The area bound by the lateral separation points is termed the area of conflict.

7.4.3 Lateral separation exists between two aircraft when at least one of the aircraft is outside the



area of conflict.

The lateral separation points are calculated by the formula: $\ell = Sy / \sin\theta$

Sy	=	The lateral distance between the tracks equal to the lateral separation minimum.
ℓ	=	The distance of the lateral separation point from the intersection.
θ	=	The angle between tracks.

Section 6 **Separation Methods and Minima**

Chapter 4 **Longitudinal Separation**

1 General

1.1 Longitudinal separation shall be applied so that the spacing between the estimated positions of the aircraft being separated is never less than a prescribed minimum. Longitudinal separation between aircraft following the same or diverging tracks may be maintained by application of speed control.

1.2 In applying a time- or distance-based longitudinal separation minimum between aircraft following the same track, care shall be exercised to ensure that the separation minimum will not be infringed whenever the following aircraft is maintaining a higher air speed than the preceding aircraft. When aircraft are expected to reach minimum separation, speed control shall be applied to ensure that the required separation minimum is maintained.

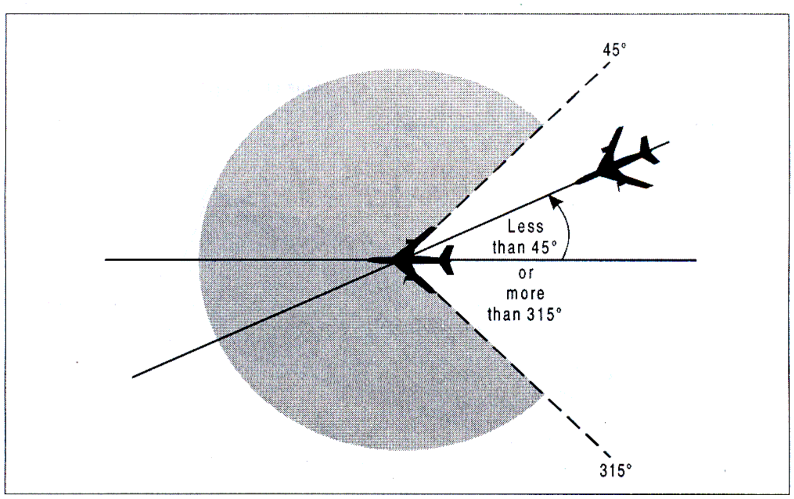
1.3 Longitudinal separation may be established by requiring aircraft to depart at a specified time, to arrive over a geographical location at a specified time, or to hold over a geographical location until a specified time.

1.4 For the purpose of application of longitudinal separation, the terms same track, reciprocal tracks and crossing tracks shall have the following meanings:

2 Same Track

2.1 Same direction tracks and intersecting tracks or portions thereof, the angular difference of which is less than 45 degrees or more than 315 degrees, and whose protected airspaces overlap.

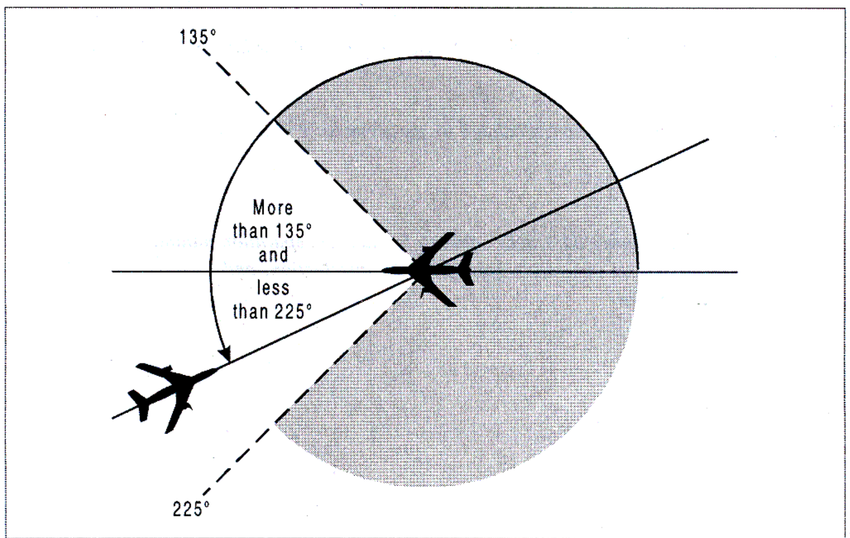
2.2 Same identical tracks are a special case of same track where the angular difference is zero degrees.



3 Reciprocal Tracks

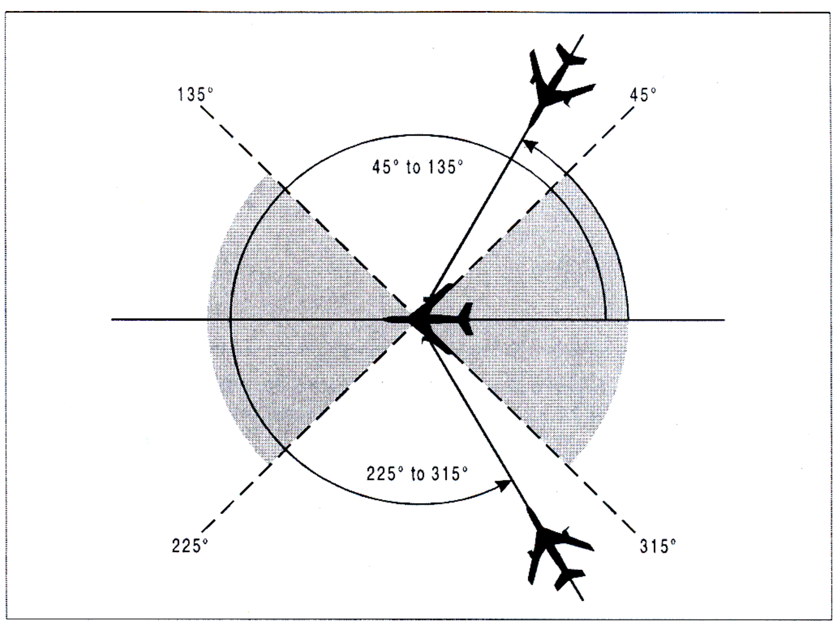
3.1 Opposite tracks and intersecting tracks or portions thereof, the angular difference of which is more than 135 degrees but less than 225 degrees, and whose protected airspaces overlap.

3.2 Reciprocal identical tracks are a special case where the angular difference is 180 degrees.



4 Crossing Tracks

4.1 Intersecting tracks or portions thereof other than those specified in paragraphs 2 and 3 of this chapter.



Note: *The above mentioned separations are in context of RNAV where no terrestrial aids e.g. VOR's or surveillance is applicable and no RNP is specified for the route.*

5 Longitudinal Separation Based On Time

5.1 Time-based separation applied may be based on position information and estimates derived from voice reports, CPDLC or ADS.

5.2 Same Track - Same Level

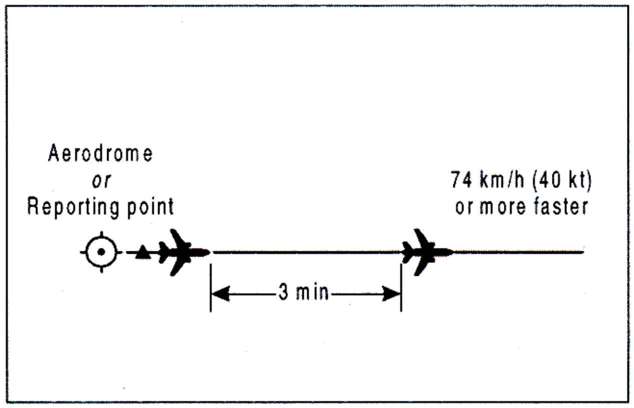
5.2.1 Separation minima established between:

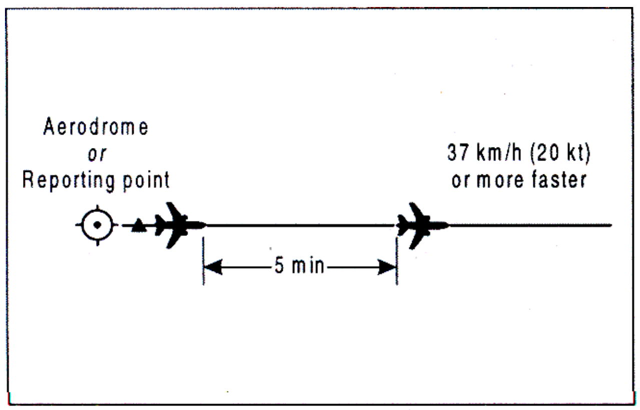
a) Aircraft that have departed from the same aerodrome; or

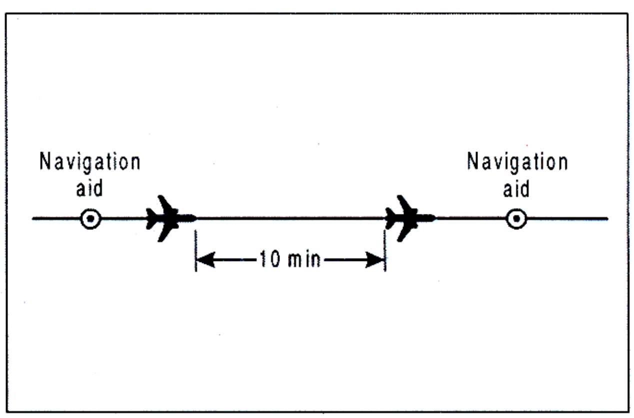
b) En-route aircraft that have reported over the same exact significant point; or

c) Between departing and en-route aircraft after the en-route aircraft has reported over a fix that is so located in relation to the departure point as to ensure that five-minute separation can be established at the point the departing aircraft will join the air route;

Same Track – Same Level		
Aircraft Route	**Minimum Separation**	**Provisions**
On departure or en-route	3 minutes	Provided preceding aircraft is maintaining a true airspeed of 40kts or faster than the succeeding aircraft.
On departure or en-route	5 minutes	Provided preceding aircraft is maintaining a true airspeed of 20kts or faster than the succeeding aircraft.
En-route	10 minutes	Same speed and the navigation infrastructure/ application allows for the aircrew to regularly assess their location.



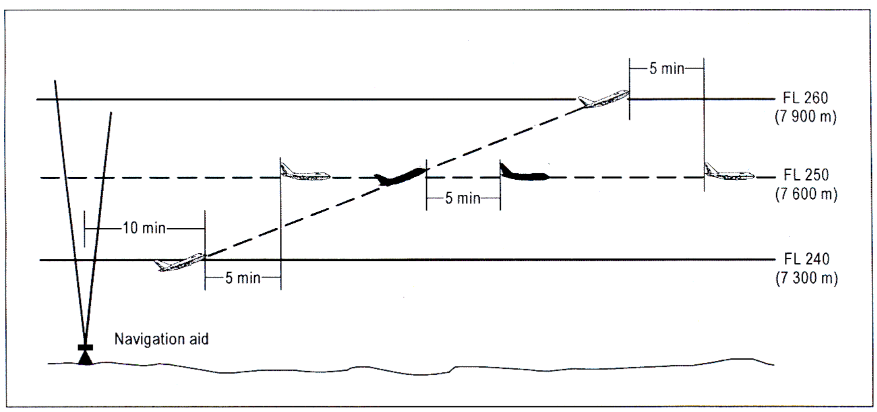


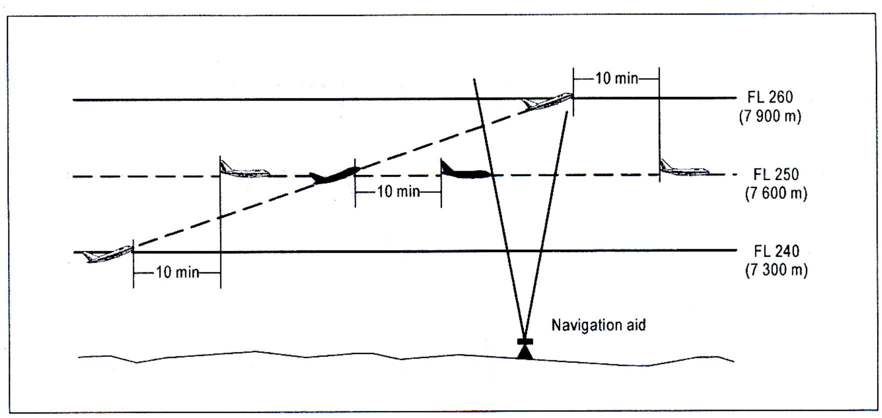


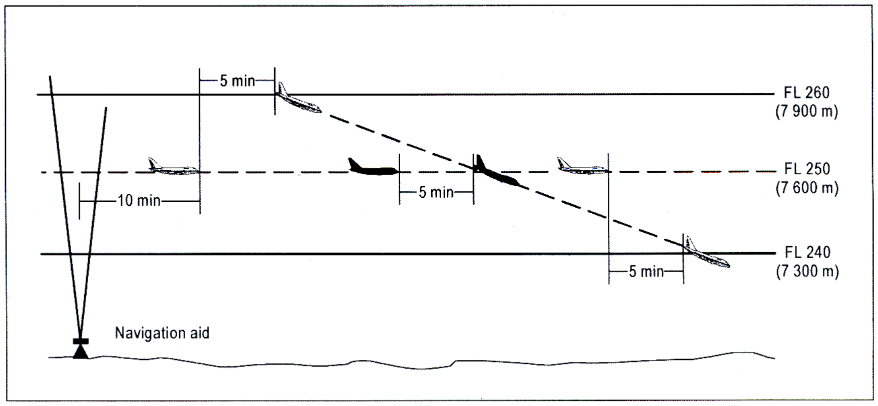
5.3 Same Track - Climbing And Descending

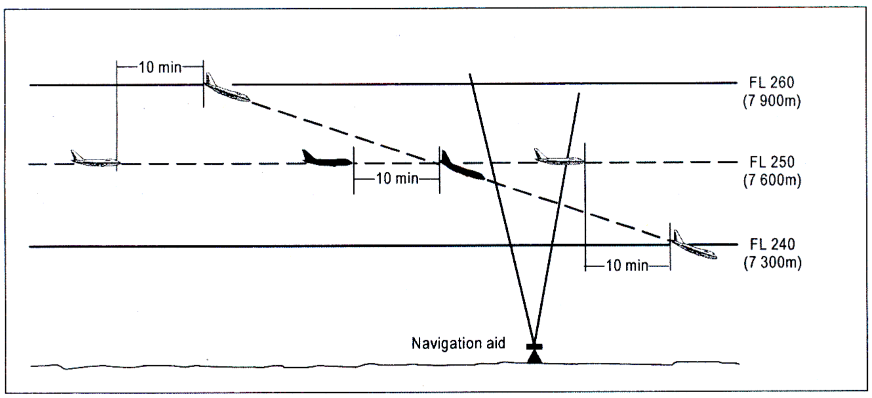
5.3.1 To facilitate application of the procedure where a change of level is involved, a descending aircraft may be cleared to a safe level above the lower aircraft, or a climbing aircraft to a safe level below the higher aircraft. Further descent or climb will be given once longitudinal separation has been established.

Same Track – Climbing And Descending.		
Aircraft Route	**Minimum Separation**	**Provisions**
En-route	5 minutes	While vertical separation does not exist, provided that the level change is commenced within 10 minutes of the second aircraft has reported over an exact reporting point.
En-route	10 minutes	While vertical separation does not exist.







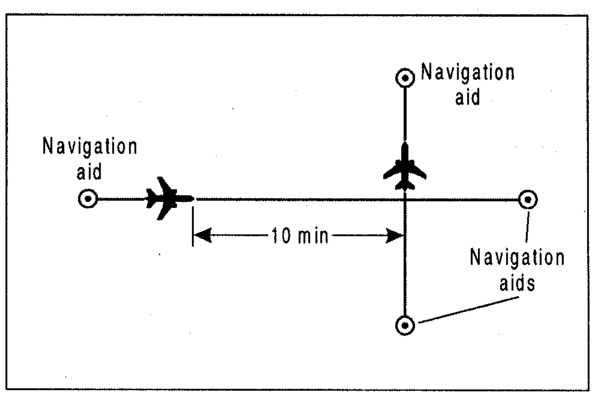


5.4 Crossing Track - Same Level Or Climbing And Descending

5.4.1 Where lateral separation is not provided, vertical separation shall be provided:

a) For at least 10 minutes before the second aircraft estimates the crossing point; and

b) For at least 10 minutes after the time the first aircraft past the crossing point.



5.5 Reciprocal track

5.5.1 Where lateral separation is not provided, vertical separation shall be provided:

a) For at least 10 minutes before the crossing time; and

b) For at least 10 minutes after the time the aircraft are estimated to pass, or are estimated to have passed.

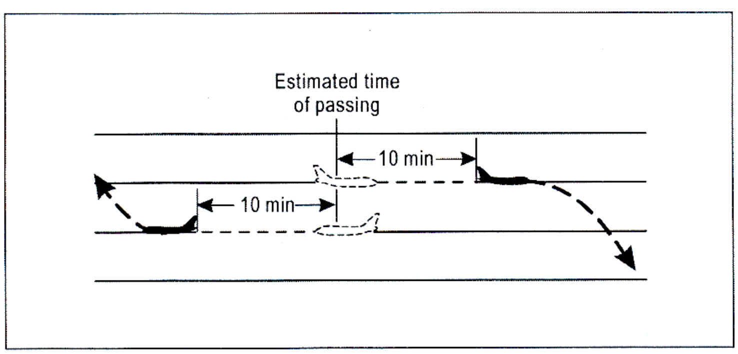
5.5.2 Provided it has been determined that the aircraft have passed each other, this minimum need not apply.

5.5.3 By means of the following methods it can be determined whether the aircraft have passed each other;

a) Visual sighting;

b) Both aircraft have reported as having crossed the same en-route navigation facility.

5.5.4 ATC should give due consideration to possible navigational errors and accuracy of navigational equipment, with particular reference to the cone of silence.



5.6 **Longitudinal Separation Based on Distance**

5.6.1 Separation shall be established by maintaining not less than specified distance(s) between aircraft positions as reported by reference to DME in conjunction with other appropriate navigation aids.

5.6.2 Direct controller-pilot communication shall be maintained while such separation is used.

5.6.3 Where the term ―on track‖ is used in the provisions relating to the application of longitudinal separation minima using DME, it means that the aircraft is flying either directly inbound to or directly outbound from the station.

5.6.4 Separation is to be checked by obtaining simultaneous DME readings from aircraft at frequent intervals to ensure that the minimum separation is established and will not be infringed.

5.7 Same Track - Same Level

5.7.1 The distance between two aircraft shall be 20 NM, provided:

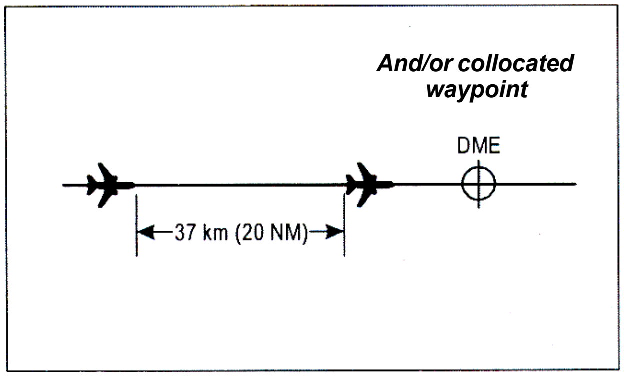
a) Each aircraft utilises:

h) The same ―on-track‖ DME stations, and when both aircraft are utilising DME; or

i) An ―on track‖ DME station and a collocated common point when one aircraft is utilising DME and the other is utilizing GNSS, or

iii) The same common point when both aircraft are utilising GNSS, and

b) Separation is checked by obtaining simultaneous DME and/ or GNSS readings from the aircraft at frequent intervals to ensure that the minimum will not be infringed.



5.7.2 The distance between two aircraft shall be 10 NM, provided:

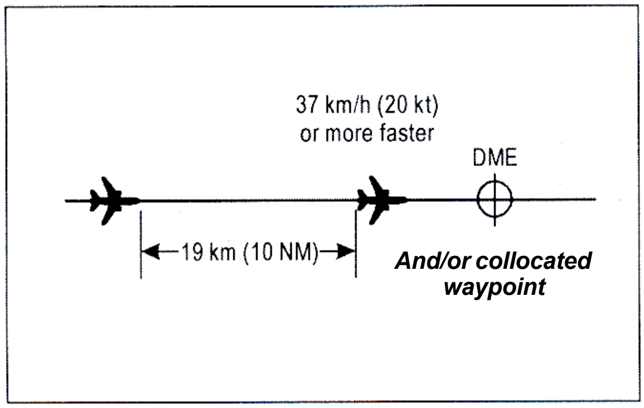
a) The leading aircraft maintains a true airspeed of 20kts or more faster than the succeeding aircraft; and

b) i) Each aircraft utilises the same—on-trackll DME station, when both aircraft are utilising DME; or

ii) An —on trackll DME station and a collocated common point when one aircraft is utilising DME and the other is utilising GNSS, or

iii) The same common point when both aircraft are utilising GNSS, and

c) Separation is checked by obtaining simultaneous DME and/ or GNSS readings from the aircraft at such intervals as are necessary to ensure that the minimum is established and will not be infringed.



5.8 Same Track - Climbing And Descending

5.8.1 The distance between two aircraft shall be 10 NM while vertical separation does not exist, provided:

a) Each aircraft utilises;

i) The same ―on-track‖ DME stations;, when both aircraft are utilising DME, or

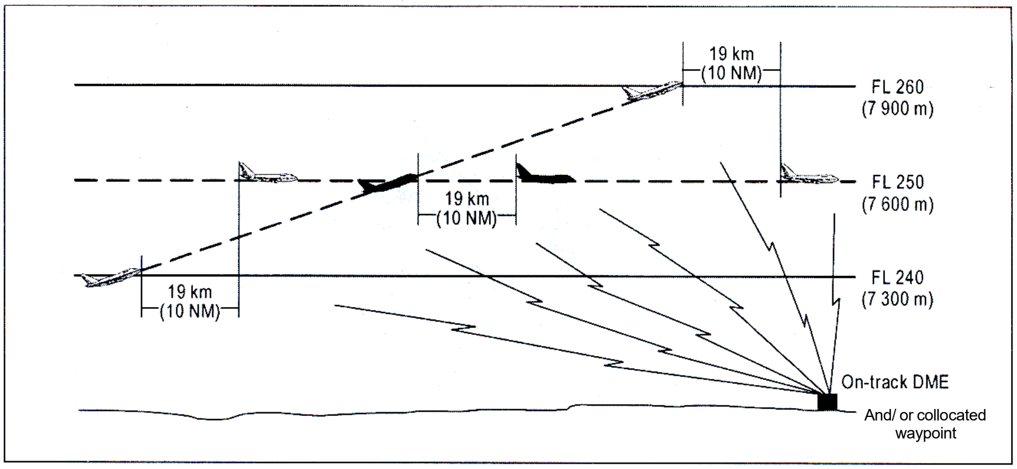
ii) An ―on track‖ DMEstation and a collocated common point when one aircraft is utilising DME and the other is utilising GNSS, or

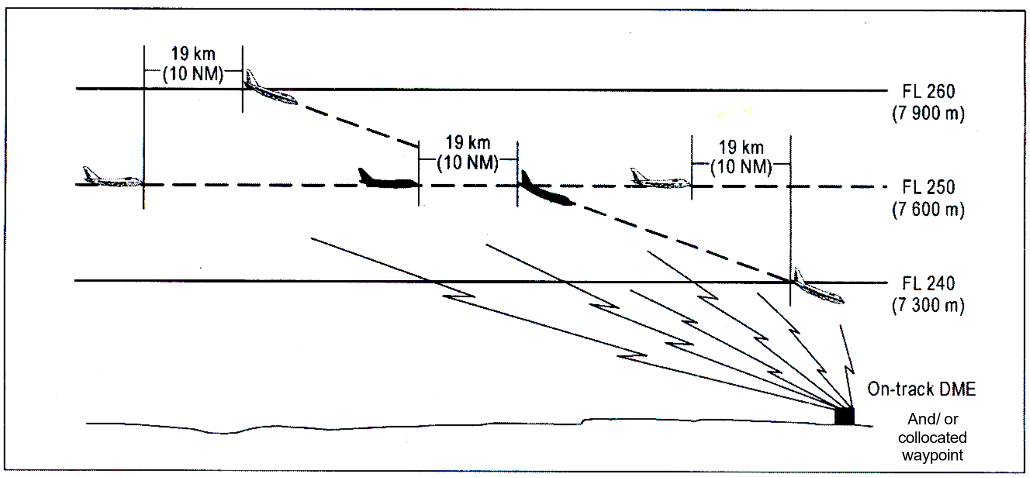
iii) same common point when both aircraft are utilising GNSS, and

b) one aircraft maintains a level while vertical separation does not exist; and

c) Separation is established by obtaining simultaneous DME and/ or GNSS readings from the aircraft.

5.8.2 To facilitate application of the procedure where a change of level is involved, a descending aircraft may be cleared to a safe level above the lower aircraft, or a climbing aircraft to a safe level below the higher aircraft. Further descent or climb will be given once longitudinal separation has been established.





5.9 Crossing Track - Same Level or Climbing and Descending

5.9.1 The distance between two aircraft shall be 20 NM, provided:

a) Each aircraft utilises:

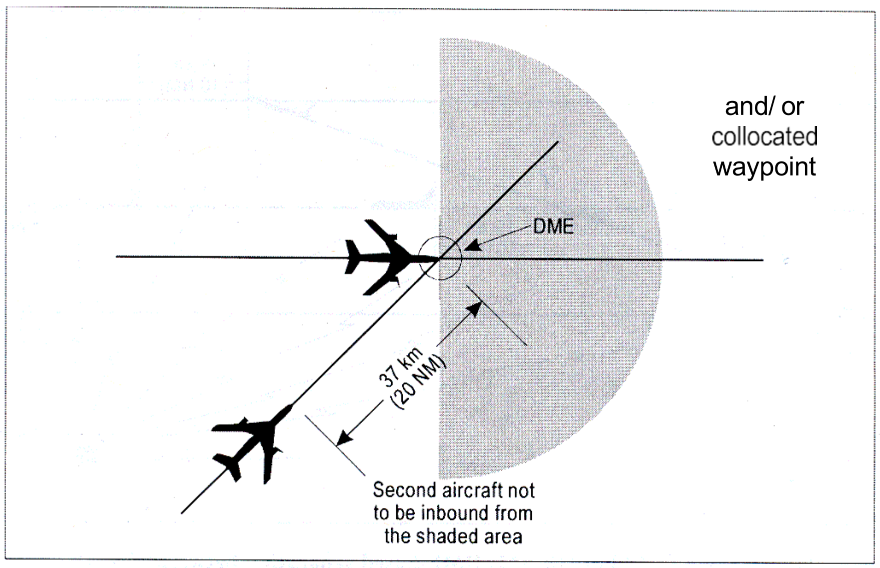
i) The same ―on-track‖ DME station when both aircraft are utilising DME, or

ii) An ―on track‖ DME station and a collocated common point when one aircraft is utilising DME and the other is utilising GNSS, or

iii) same common point when both aircraft are utilising GNSS.

b) Separation is checked by obtaining simultaneous DME readings from the aircraft at frequent intervals to ensure that the minimum will not be infringed; and

c) Each aircraft reports the distance from the station located at the crossing point of the tracks and that the relative angle between the tracks is less than 90 degrees.



5.9.2 The distance between two aircraft shall be 10 NM, provided:

a) The leading aircraft maintains a true airspeed of 20kts or more faster than the succeeding aircraft; and

b) Each aircraft utilises:

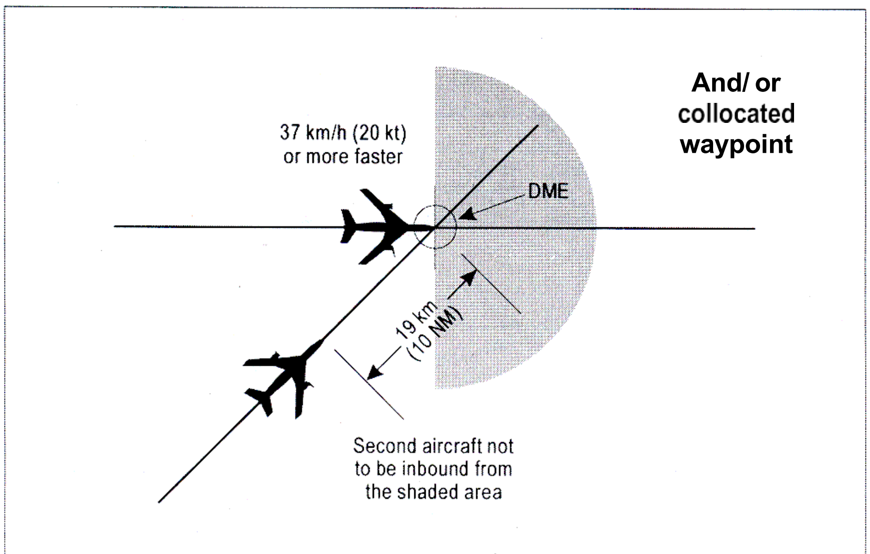
i) The same—on-trackll DME station when both aircraft are utilising DME, or

ii) An —on trackll DME station and a collocated common point when one aircraft is utilising DME and the other is utilising GNSS, or

iii) same common point when both aircraft are utilising GNSS.

c) Separation is checked by obtaining simultaneous DME readings from the aircraft at such intervals as are necessary to ensure that the minimum is established and will not be infringed; and

d) Each aircraft reports distance from the station located at the crossing point of the tracks and that the relative angle between the tracks is less than 90 degrees.



5.10 **Reciprocal Track**

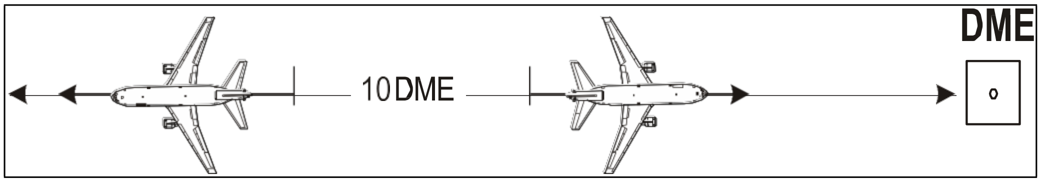
5.10.1 Separation is established when;

a) Each aircraft utilises the same on-track DME and/or collocated common point or same common point; and

b) It has been positively established that the aircraft have passed each other; and

c) Are at least 10 NM apart.

5.10.2 There is no longitudinal distance separation for reciprocal tracks before both aircraft have crossed.



6 Longitudinal Separation Minima with Mach Number Technique Based On Distance Using RNAV.

Note: *See paragraph 16 with regards to the use of Mach numbers*

6.1 Turbojet aircraft shall adhere to the Mach number approved by ATC and shall request ATC approval before making any changes thereto. If it is essential to make an immediate temporary change in the Mach number (e.g. due to turbulence), ATC shall be notified as soon as possible that such a change has been made.

6.2 If it is not feasible, due to aircraft performance, to maintain the last assigned Mach number during en route climbs and descents, pilots of aircraft concerned shall advise ATC at the time of the climb/descent request.

6.3 RNAV distance based separation minima shall not be applied after ATC has received pilot advice indicating navigation equipment deterioration or failure.

6.4 Separation shall be established by maintaining not less than the specified distance between aircraft positions as reported by reference to RNAV equipment.

6.5 Direct controller-pilot communications should be maintained, while such separation is used. Where high frequency or general purpose extended range very high frequency air-ground communication channels are used for area control service and are worked by air-ground communicators, suitable arrangements shall be made to permit direct controller-pilot communications, or monitoring by the controller of all air-ground communications.

6.6 To assist pilots to readily provide the required RNAV distance information, such position reports should, wherever possible, be referenced to a common point ahead of both aircraft.

6.7 RNAV distance based separation may be applied between RNAV-equipped aircraft when operating on designated RNAV routes or on ATS routes defined by VOR.

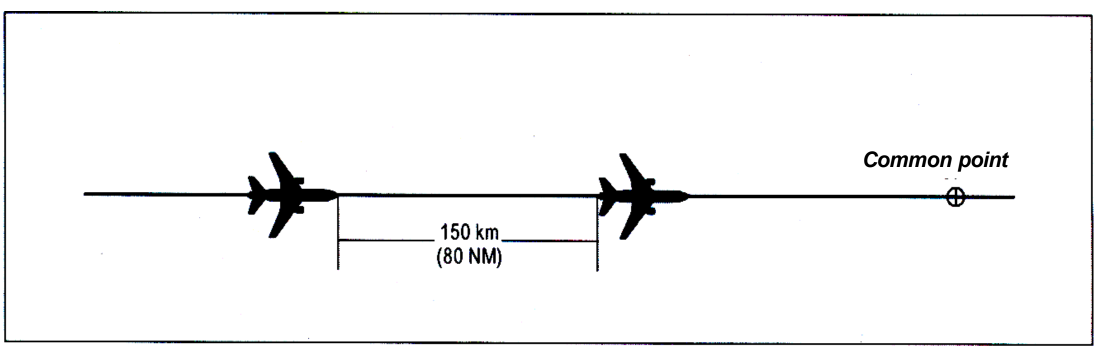
7 Same Track - Same Level

7.1 80 NM RNAV distance based with Mach number technique in lieu of a 10 minute longitudinal separation minimum with Mach number technique, provided:

a) The preceding aircraft shall maintain a Mach number equal to or greater than that maintained by the following aircraft; and

b) Each aircraft reports its distance to or from the same—on-trackll common point; and

c) Separation between aircraft at the same level is checked by obtaining simultaneous RNAV distance readings from the aircraft at frequent intervals to ensure that the minimum will not be infringed.



8 Same Track - Climbing and Descending

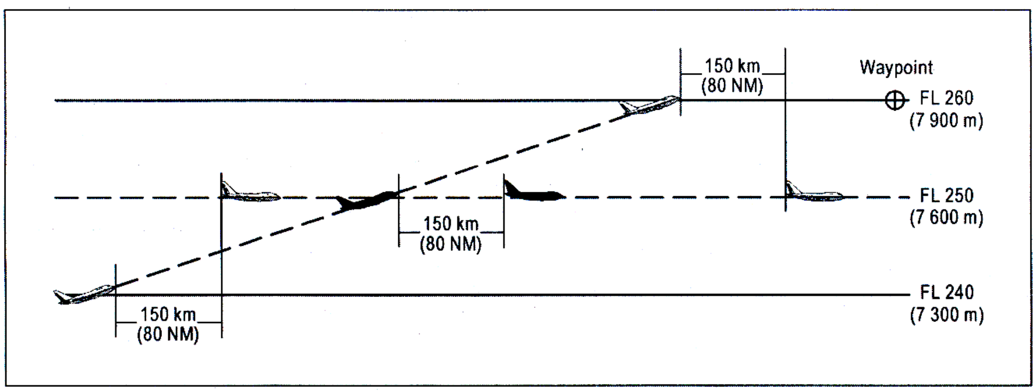
8.1 80 NM RNAV distance based with Mach number technique in lieu of a 10 minute longitudinal separation minimum with Mach number technique, provided:

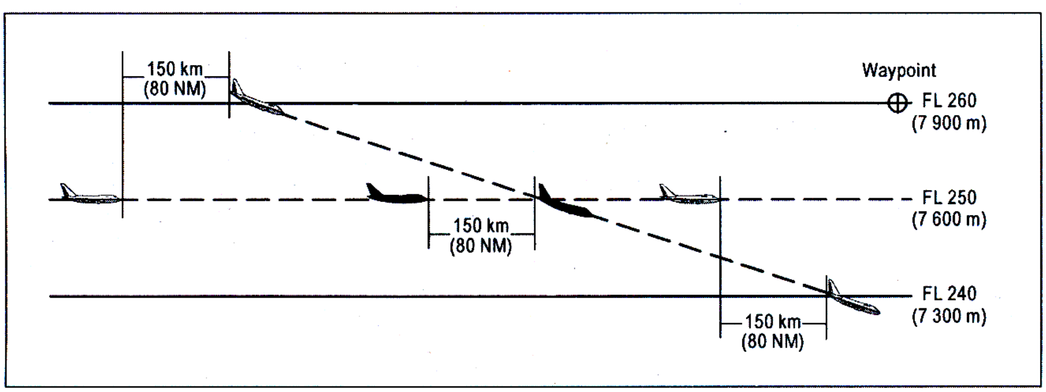
a) The preceding aircraft shall maintain a Mach number equal to or greater than that maintained by the following aircraft; and

b) Each aircraft reports its distance to or from the same —on-track" common point; and

c) Separation is established by obtaining simultaneous RNAV distance readings from the aircraft; and

d) One aircraft maintains a level while vertical separation does not exist.





8.2 To facilitate application of the procedure where a change of level is involved, a descending aircraft may be cleared to a safe level above the lower aircraft, or a climbing aircraft to a safe level below the higher aircraft. Further descent or climb will be given once longitudinal separation has been established

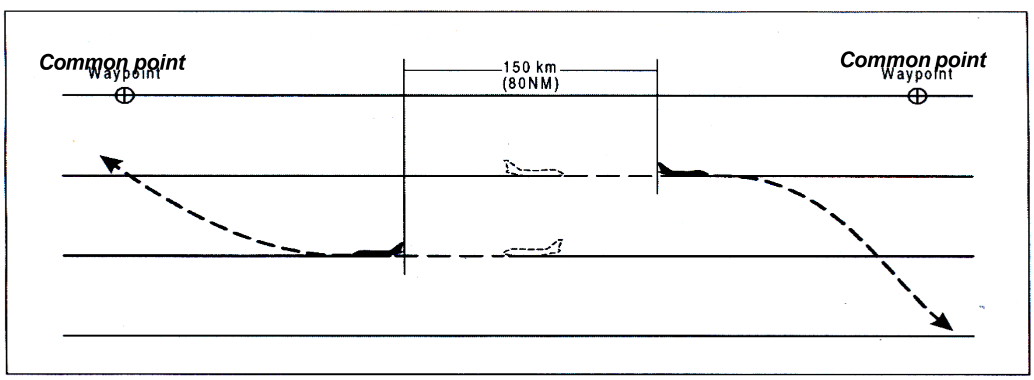
9 Reciprocal track

9.1 Separation is established when:

a) Each RNAVequippedaircraftutilizesthesame —on-trackǁcommon point; and

b) It has been positively established that the aircraft have passed each other by simultaneous RNAV distance readings to or from that common point; and

c) Are at least 80 NM apart.



10 Longitudinal Separation Minima Based On Distance Using RNAV Where RNP Is Specified.

10.1 Within designated airspace, or on designated routes, separation minima in accordance with the provisions of this section may be used, subject to regional air navigation agreements.

10.2 Separation shall be established by maintaining not less than the specified distance between aircraft positions as reported by reference to the same —on trackǁ common point, whenever possible ahead of both aircraft, or by means of an automated position reporting system.

10.3 The term ―on track‖ means that the aircraft is flying either directly inbound to or directly outbound from the station or common point.

10.4 When information is received indicating navigation equipment failure or deterioration below the navigation performance requirements, ATC shall then, as required, apply alternative separation minima.

10.5 Direct controller-pilot communications shall be maintained while applying a distance based separation minima.

10.6 Direct controller-pilot communications shall be voice or CPDLC. The communication criteria necessary for CPDLC to satisfy the requirement for direct controller-pilot communications shall be established by an appropriate safety assessment.

10.7 Prior to and during the application of a distance-based separation minimum, the controller should determine the adequacy of the available communication link, considering the time element required to receive replies from two or more aircraft, and the overall workload/traffic volume associated with the application of such minima.

10.8 When aircraft are at, or are expected to reduce to, the minimum separation applicable, speed control techniques, including assigning Mach number, shall be applied to ensure that the minimum distance exists throughout the period of application of the minima.

11 Longitudinal Distance-Based Separation Minima in an RNP RNAV Environment Not Using ADS

11.1 Same track - same level or climbing and descending;

Same Track – Same Level or Climbing And Descending.

Separation minima	RNP	Communication	Surveillance	Distance verification
50NM	10	Direct controller – pilot.	Procedural position reports.	At least every 24 minutes.

11.2 Where a considerable change of level is involved using distance-based separation, a descending aircraft may be cleared to some convenient level above the lower aircraft, or a climbing aircraft to some convenient level below the higher aircraft 4 000 ft, or less to permit a further check on the separation that will be maintained while vertical separation does not exist.

11.3 It should be noted that the separation minimum depicted above is based on safety assessments performed specifically for a particular network of tracks or routes. As such, the assessments evaluated traffic characteristics which might be unique to the network being assessed.

11.4 The separation minimum above was developed in accordance with a collision risk analysis, which dictates conditions under which this separation can be applied.

11.5 During the application of the 50 NM separation, when an aircraft fails to report its position:

a) The controller shall take action within 3 minutes to establish communication; or

b) If communication has not been established within 8 minutes of the time the report should have been received, the controller shall take action to apply an alternative form of separation.

11.6 Where automated position reporting applies, a common time reference shall be used.

12 Reciprocal Track

12.1 Separation is established when:

a) Each RNAV equipped aircraft utilises the same ―on-track‖ common point; and

b) It has been positively established that the aircraft have passed each other by simultaneous RNAV distance readings to or from that common point; and

c) Are at least 50 NM apart.

13 Longitudinal Distance-Based Separation Minima In An RNP RNAV Environment Using ADS

13.1 Separation based on the use of ADS shall be applied so that the distance between the calculated positions of the aircraft is never less than the prescribed minimum.

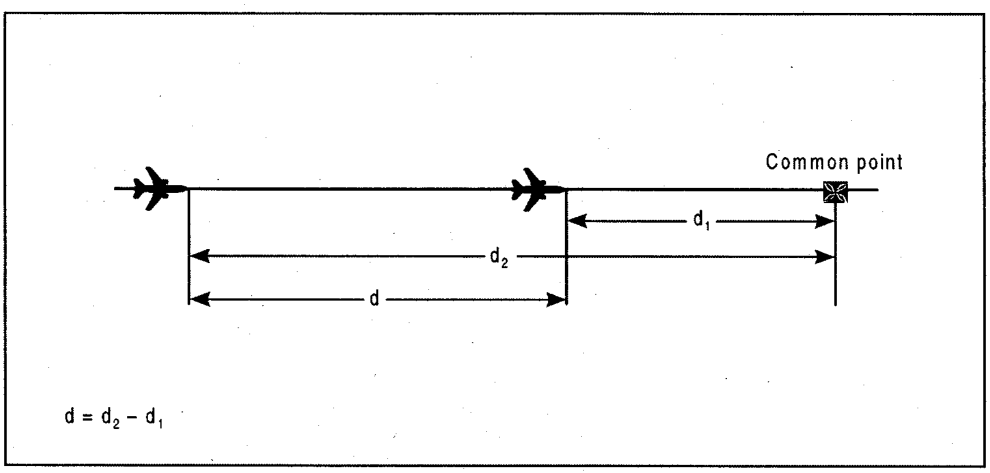
13.2 This distance shall be obtained by one of the following methods;

When the aircraft are on the same identical track, the distance may be measured between:

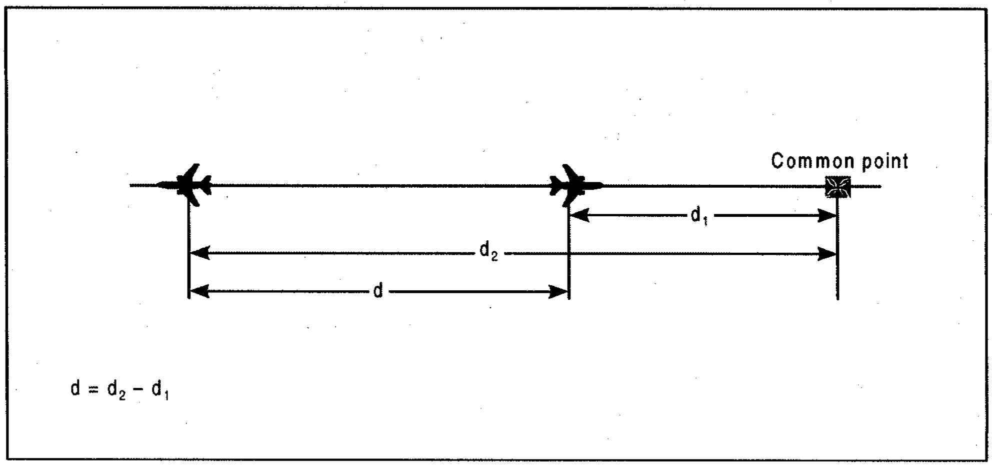
a) The calculated positions of the aircraft; or

b) May be calculated by measuring the distances to a common point on the track. (See Fig. 1&2).

Note: *Same identical tracks are a special case of same track definition: where the angular difference is zero degrees; or reciprocal tracks definition: where the angular difference is 180 degrees.*



Calculation of longitudinal distance between aircraft on identical track- Same Direction (Fig 1).



Calculation of longitudinal distance between aircraft on identical track – Opposite Direction (Fig 2).

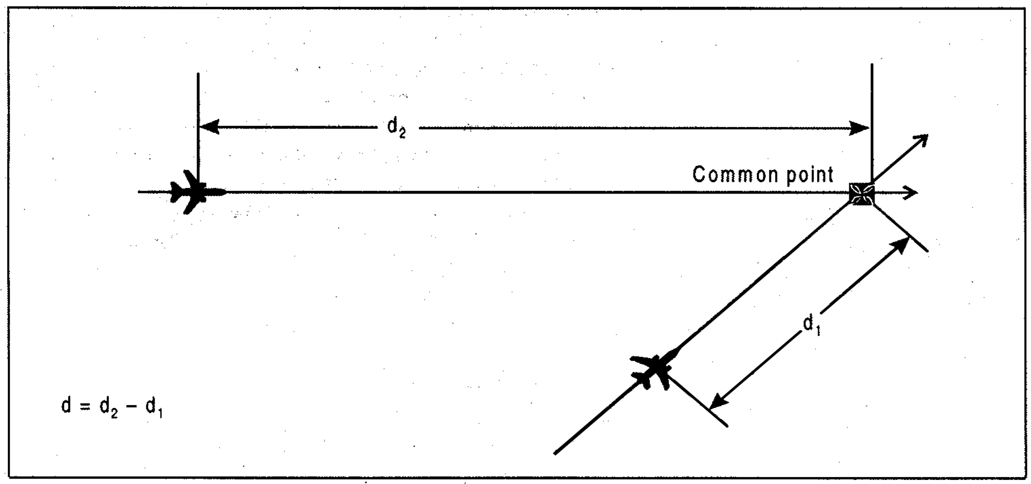
13.3 When the aircraft are on same or reciprocal non-parallel tracks other than in above, the distance shall be calculated by measuring the distances:

a) To the common point of intersection of the tracks; or

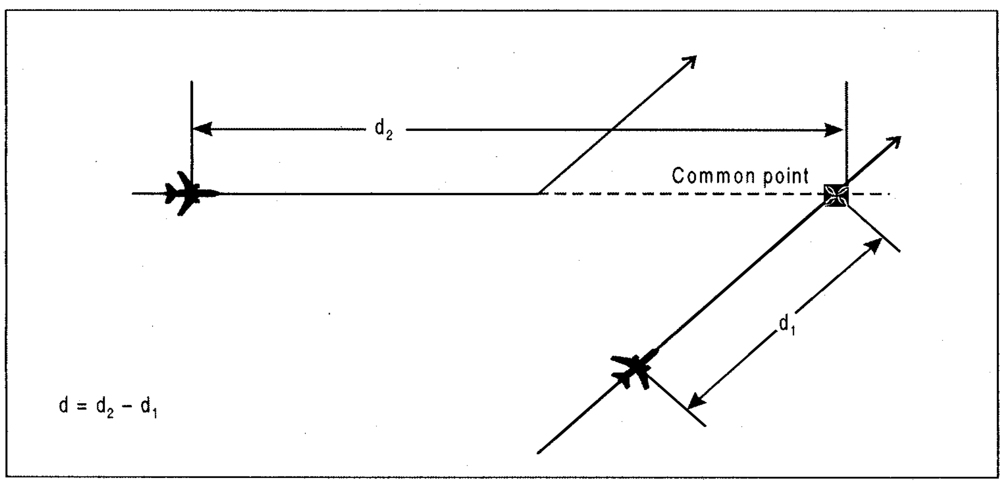
b) Projected track.(See Figures 3 to 5).

13.4 When the aircraft are on parallel tracks whose protection areas overlap, the distance shall be measured; along the track of one of the aircraft as in paragraph 14.32.3 using its calculated position and the point abeam the calculated position of the other aircraft. (See Figure 6).

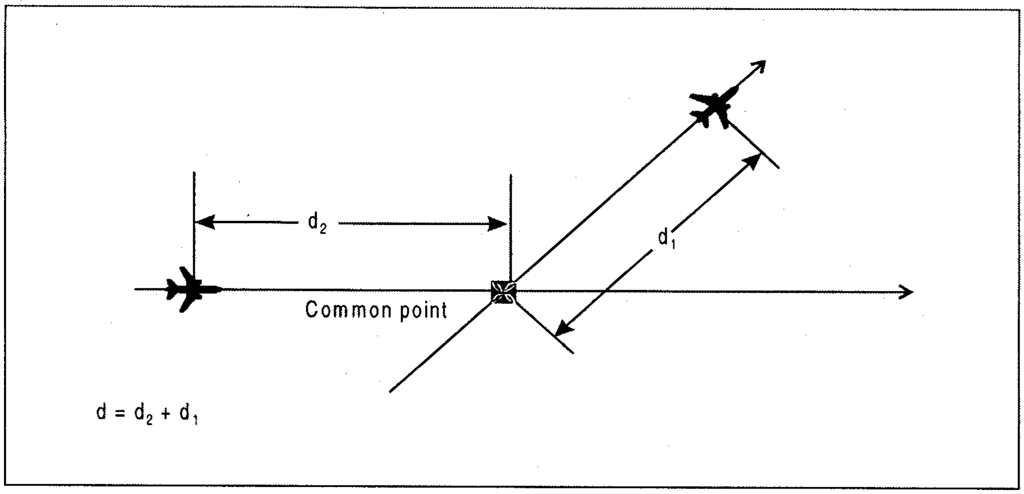
13.5 When aircraft are at, or are expected to reduce to, the minimum separation applicable, speed control techniques, including assigning Mach number, shall be applied to ensure that the minimum distance exists throughout the period of application of the minima.



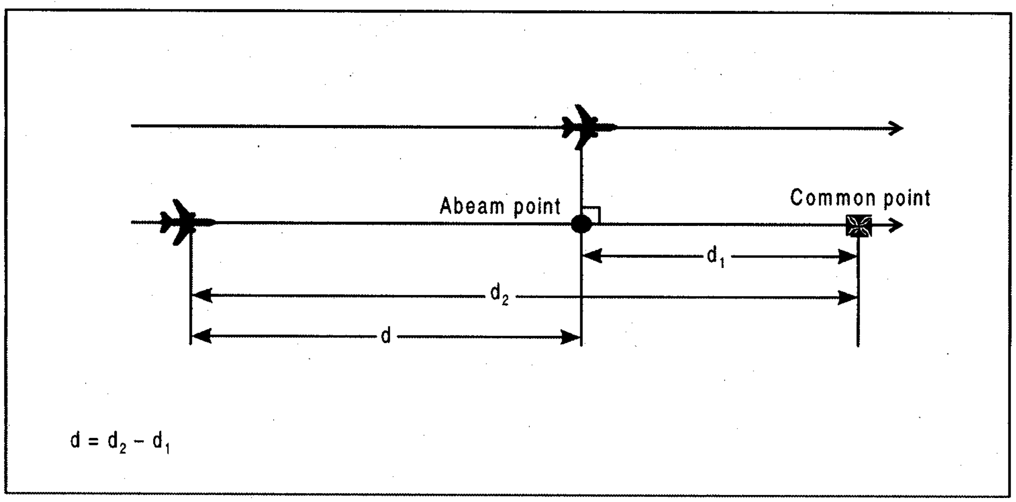
Calculation of longitudinal distance between aircraft on ―Same Track – but not identical‖ (Fig 3).



Calculation of longitudinal distance between naircraft on ―Same Track – but not identical‖ (Fig 4).



Calculation of longitudinal distance between aircraft –– Opposite sides of the common point‖(Fig 5).



Calculation of longitudinal distance between aircraft – Parallel Tracks (Fig 6).

Same Track – Same Level or Climbing and Descending		
Separation minima	**RNP**	**Maximum ADS periodic reporting interval.**
50NM	10	27 Minutes
50NM	4	32 Minutes
30NM	4	14 Minutes

14.1 The indicated periodic reporting intervals are specific to the use of ADS and are derived from performed safety assessments. As a result, these intervals may differ from those required for use with other procedural RNAV longitudinal separation minima.

14.2 The communication system provided to enable the application of these separation minima shall allow a controller:

a) Within 4 minutes, to intervene and resolve a potential conflict by contacting an aircraft using the normal means of communication.

b) An alternative means shall be available to allow the controller to intervene and resolve the conflict within a total time of 10.5 minutes, should the normal means of communication fail.

14.3 When an ADS periodic or common point change event report is not received within 3 minutes of the time it should have been sent, the report is considered overdue and the controller shall take action to obtain the report as quickly as possible, normally by ADS or CPDLC.

14.4 If a report is not received within 6 minutes of the time the original report should have been sent, and there is a possibility of loss of separation with other aircraft, the controller shall take action to resolve any potential conflict(s) as soon as possible. The communication means provided shall be such that the conflict is resolved within a further 7.5 minutes.

14.5 Reciprocal Track

Reciprocal track – after crossing		
Separation minima	**RNP**	**Maximum ADS periodic reporting interval.**
50NM	10	27 Minutes
50NM	4	32 Minutes
30NM	4	14 Minutes

15 Horizontal Speed Control Instructions

15.1 In order to facilitate a safe and orderly flow of traffic, aircraft may, subject to conditions specified by the appropriate authority, be instructed to adjust speed in a specified manner. Flight crews should be given adequate notice of planned speed control.

Note 1.— Application of speed control over a long period of time may affect aircraft fuel reserves.

Note 2.— Provisions concerning longitudinal separation using the Mach number technique are contained in Chapter 5, Separation Methods and Minima.

15.2 Speed control instructions shall remain in effect unless explicitly cancelled or amended by the controller.

Note.— Cancellation of any speed control instruction does not relieve the flight crew of compliance with speed limitations associated with airspace classifications as specified in Annex 11 — Air Traffic Services*, Appendix 4*

15.3 Flight crews should be given adequate notice of planned speed control, because application of speed control over a long period of time may affect aircraft fuel reserves.

15.4 Speed control shall not be applied to aircraft entering or established in a holding pattern.

15.5 Speed adjustments should be limited to those necessary to establish and/or maintain a desired separation minimum or spacing.

15.6 Instructions involving frequent changes of speed, including alternate speed increases and decreases, should be avoided.

15.6 The flight crew shall inform the ATC unit concerned if at any time they are unable to comply with a speed instruction. In such cases, the controller shall apply an alternative method to achieve the desired spacing between the aircraft concerned.

15.7 At levels at or above FL 250, speed adjustments should be expressed in multiples of 0.01 Mach; at levels below FL 250, speed adjustments should be expressed in multiples of 10 kts based on indicated airspeed (IAS).

15.8 Mach 0.01 equals approximately 6 kts IAS at higher flight levels.

15.9 When an aircraft is heavily loaded and at a high level, its ability to change speed may, in cases, be very limited.

15.10 Aircraft shall be advised when a speed control restriction is no longer required.

15.11 In order to maintain a desired spacing using speed control techniques, specific speeds need to be assigned to all the aircraft concerned.

15.12 The true airspeed (TAS) of an aircraft will decrease during descent when maintaining a constant IAS.

15.13 When two descending aircraft maintain the same IAS, and the leading aircraft is at the lower level, the TAS of the leading aircraft will be lower than that of the following aircraft. The distance between the two aircraft will thus be reduced, unless a sufficient speed differential is applied.

15.14 For the purpose of calculating a desired speed differential between two succeeding aircraft, 6 kts IAS per 1 000 ft height difference may be used as a general rule.

15.15 At levels below FL 80 the difference between IAS and TAS is negligible for speed control purposes.

15.16 Time and distance required to achieve a desired spacing will increase with higher levels, higher speeds, and when the aircraft is in a clean configuration.

15.17 An aircraft should, when practicable, be authorized to absorb a period of notified terminal delay by cruising at a reduced speed for the latter portion of its flight.

15.18 An arriving aircraft may be instructed to maintain its ―maximum speed‖, ―minimum clean speed‖, ―minimum speed, or specified speed.

15.19 ―Minimum clean speed‖ signifies the minimum speed at which an aircraft can be flown in a clean configuration, i.e. without deployment of lift-augmentation devices, speed brakes or landing gear.

15.20 Speed reductions to less than 250 kts IAS for turbojet aircraft during initial descent from cruising level should be applied only with the concurrence of the flight crew.

15.21 Instructions for an aircraft to simultaneously maintain a high rate of descent and reduce its speed should be avoided as such manoeuvres are normally not compatible. Any significant speed reduction during descent may require the aircraft to temporarily level off to reduce speed before continuing descent.

15.22 Arriving aircraft should be permitted to operate in a clean configuration for as long as possible.

Below FL 150, speed reductions for turbojet or fanjet aircraft should not be less than 210 kts IAS, which will normally be very close to the minimum speed of turbojet aircraft in a clean configuration, may be used.

15.23 Only minor speed reductions not exceeding plus/minus 20 kts IAS should be used for aircraft on intermediate and final approach.

15.24 Speed control should not be applied to aircraft after passing a point 4 NM from the threshold. (Final approach.)

15.25 In order to establish a desired spacing between two or more successive aircraft, the controller should first:

a) Either reduce the speed of the last aircraft, or

b) Increase the speed of the lead aircraft; and then

c) Adjust the speed(s) of the other aircraft in order.

16 The Mach Number Technique

16.1 The term ―Mach number technique‖ is used to describe the technique of clearing turbo-jet aircraft operating along the same route to maintain specified true Mach numbers in order to maintain adequate longitudinal separation between successive aircraft at, or climbing or descending to, the same level.

16.2 Objectives of the Use of the Mach The Number Technique

16.2.1 The principal objectives of use of the Mach the number technique are:

a) To ensure continued longitudinal separation between successive aircraft on long route segments with a minimum of Air Traffic Control (ATC) intervention;

b) To obtain improved utilisation of such routes, thus contributing to the economy of flight operations of traffic concerned.

16.2.2 To achieve these objectives the speeds of aircraft operating along the same track at the same level or climbing or descending to operate at the same level are stabilized. This stability permits reasonably accurate projections of the expected longitudinal separation between aircraft to points well beyond the point where separation is first confirmed, which reduces the need for frequent ATC intervention.

16.2.3 Practical experience in the North Atlantic (NAT) region has confirmed the assumptions made above. It has been found that successive aircraft operating along the same track at the same level and aircraft climbing or descending to operate at the same level as another aircraft and maintaining the same Mach number also maintain a reasonably constant time interval between each other, when checked by position reports over the same point. This is due to the fact that the aircraft concerned are normally subject to approximately the same wind and temperature conditions. Minor variations in speed, which might temporarily increase or decrease the spacing between aircraft, tend to be neutralized over prolonged periods of flight.

16.3 **Prerequisites**

16.3.1 The application of the Mach number technique is particularly suitable for areas where the environment is such that position reporting and ATC intervention with individual flights can, at times, be subject to delay. In addition, the following represent typical characteristics of the route structure and environment which make the use of a given area suitable for the application of the Mach number technique:

a) Aircraft in the area generally follow the same or diverging tracks until they are provided with other forms of separation;

  I. Operations conducted in the area comprise a significantly large phase of stable flight (e.g. not less than one hour) and the aircraft concerned have normally reached an operationally suitable level when entering the area.

  II. The effect of seasonal jet stream phenomena should be examined closely before introduction of the Mach number technique on a regular basis.

b) Aircraft instrumentation. The use of the Mach number technique in a given area is based on the assumption that the relevant instruments used by aircraft to which this technique is applied have been calibrated in accordance with applicable airworthiness practices. Therefore, both States of Registry and operators concerned should take the necessary measures to ensure continued compliance with this prerequisite.

c) Flight progress information for ATC. ATC units using the Mach number technique must have at their disposal the latest forecast upper wind information, or position information obtained from previous aircraft. Such information is necessary in order to permit ATC to prepare (either manually or by means of a computer) flight progress strips showing calculated estimated times over significant points up to and including the exit point from the area wherein the technique is applied in order to confirm that the required longitudinal separation will exist at the exit point.

d) Adherence to assigned Mach number. Unless otherwise advised by the pilot concerned, ATC will assume that the last assigned Mach number will be maintained both in cruise and in any cleared step-climbs or step-descents made in the course of the flight.

16.4 General Procedures

16.4.1 Application of the Mach number technique should always be based on the true Mach number.

16.4.2 The ATC clearance must include the assigned Mach number that is to be maintained. It is therefore necessary that information on the desired Mach number be included in the flight plans by pilots intending to operate along routes in the area concerned.

16.4.3 ATC has a requirement to calculate estimated times at which aircraft will pass significant points along their track. These calculations are necessary both for;

a) The provision of longitudinal separation between aircraft on crossing tracks, and

b) For co-ordination with adjacent ATC units. Therefore ATC must be provided with necessary data to do this.

16.4.4 It is very important that the estimates for the entry point to the area provided by pilots are as accurate as possible since they form the basis for the advance planning of longitudinal separation between aircraft.

16.4.5 The prescribed longitudinal separation between successive aircraft flying at the same level must be provided over the entry point and on a particular track or tracks, or exist when climb or descent to the level of another aircraft is accomplished into the area concerned.

16.4.6 Thereafter, provided that aircraft maintain their last assigned Mach numbers, intervention by ATC for the portion of flight where the Mach number technique is used, should normally only be necessary if an aircraft, for some reason, is obliged to change its number or if there is conflicting traffic on crossing tracks or a flight level change is intended.

16.4.7 The Mach number technique requires that pilots strictly adhere to the following procedures:

a) Aircraft must strictly adhere to the last assigned Mach number;

b) If essential to make an immediate temporary change in Mach number (e.g. due to turbulence), the appropriate ATC unit should be notified as soon as possible of that change;

c) When required by the appropriate ATC unit, the current true Mach number should be included in routine position reports.

16.4.8 Due account must be taken of problems which may be caused at entry and exit points if the longitudinal separation minima used in adjacent airspace differ from those used in the area where the Mach number technique is used.

16.5 Specific Procedures

16.5.1 The following specific procedures related to the use of the Mach number technique are based on experience gained in its use in the NAT region. They are especially useful in areas of high traffic density where position reporting and ATC intervention with individual flights may, at times, be subject to delay.

16.5.2 En-route step-climbs and step-descents

16.5.3 The Mach number technique may be used as a means of applying longitudinal separation between aircraft carrying out step-climbs or step-descents and other en- route traffic on the same track provided;

a) That the prescribed minimum longitudinal separation between the climbing/ descending aircraft and other affected en-route traffic exists at the time a climb/descent clearance is issued; and

b) Will exist during climb/descent, as well as at each further significant point along track and at the exit point.

16.5.4 Application of this procedure is based on the assumption that the last assigned true Mach number will be maintained during step-climbs and step-descents, and that in the event it is not feasible, ATS is advised at the time of the climb/descent request.

16.6 Separation at Entry Point When the Following Aircraft Is the Faster

16.6.1 The NAT/SPG developed a table to be used in connection with the application of the Mach number technique at the entry point in situations where the following aircraft is maintaining a true Mach number greater than the preceding aircraft.

This table shows in terms of distance to be flown (in still air) the separation required in minutes at entry point;

Difference in Mach	**Distance To Fly And Separation(In Minutes) Required At Entry Point.**				
	0001-600NM	601-1200NM	1201-1800NM	1801NM-2400NM	2401-3000NM
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

16.6.2 If two aircraft intend to operate along the same track and at the same flight level, with the second aircraft operating at a higher true Mach number than the preceding aircraft, the longitudinal spacing between the aircraft over the entry point should be increased by an additional time interval.

16.6.3 To ensure that minimum longitudinal separation will exist over that point the increase must take into account:

a) The relative ground speeds; and

b) The track distance to the common exit point.

16.6.4 The calculation of ground speeds and estimated times over significant points is a time-consuming process which, in dense traffic situations, could result in unacceptable delays in issuance of clearances. A ―rule of thumb‖ may be applied which allows clearances to be issued in a timely manner, provided the expected minimum longitudinal separation over the exit point is subsequently confirmed when the calculated flight progress strip data become available.

16.6.5 The rule of thumb.

For each 600 NM in distance between the entry and exit points of the area where the Mach number technique is used, add one minute for each 0.01 difference in Mach number for the two aircraft concerned to compensate for the fact that the second aircraft is overtaking the first aircraft

Track Distance.	**Required Multiplier.**	**Differences In Mach Number.**	**Required Minutes To Be Added.**
1800NM	3	0.01	3
2400NM	4	0.02	8

3000NM	5	0.01	5

An aircraft operating at Mach 0.82 is followed by another aircraft operating at Mach 0.84. The longitudinal separation minimum at the exit point is 15 min. Track distance is 1 800 NM.

Calculation:

Add 3min x 2 (Required multiplier) = 6 min:

15 min + 6 min = 21 min. longitudinal separation at entry point.

An aircraft operating at Mach 0.78 is followed by another aircraft operating at Mach 0.84. The longitudinal separation minimum at the exit point is 15 min. Track distance is 2 400 NM.

Calculation:

Add 4 min x 6 (Required multiplier) = 24 min:

15 min + 24 min = 39 min. longitudinal separation at entry point.

16.7 Longitudinal Separation Minima with Mach Number Technique Based On Time

16.7.1 Turbojet aircraft shall adhere to the Mach number approved by ATC and shall request ATC approval before making any changes thereto. If it is essential to make an immediate temporary change in the Mach number (e.g. due to turbulence), ATC shall be notified as soon as possible that such a change has been made.

16.7.2 If it is not feasible, due to aircraft performance, to maintain the last assigned Mach number during en-route climbs and descents, pilots of aircraft concerned shall advise ATC at the time of the climb/descent request.

16.8 Same Track – Same Level or Climbing and Descending

16.8.1 Separation is established when the turbojet aircraft are adhering to Mach number specified and required time interval is established; and

a) The aircraft concerned have reported over the same reporting point and follow the same track or continuously diverging tracks until some other form of separation is provided; or

b) If the aircraft have not reported over the same reporting point and it is possible to ensure, by ***ATS Surveillance System*** or other means, that the appropriate time interval will exist at the common point from which they either follow the same track or continuously diverging tracks;

Same Track – Same Level Or Climbing And Descending.	
Time interval at same or common reporting point.	**Provided the preceding aircraft is maintaining this Mach number greater than the succeeding aircraft.**
10	Equal to or greater.
9	0.02
8	0.03
7	0.04
6	0.05
5	0.06

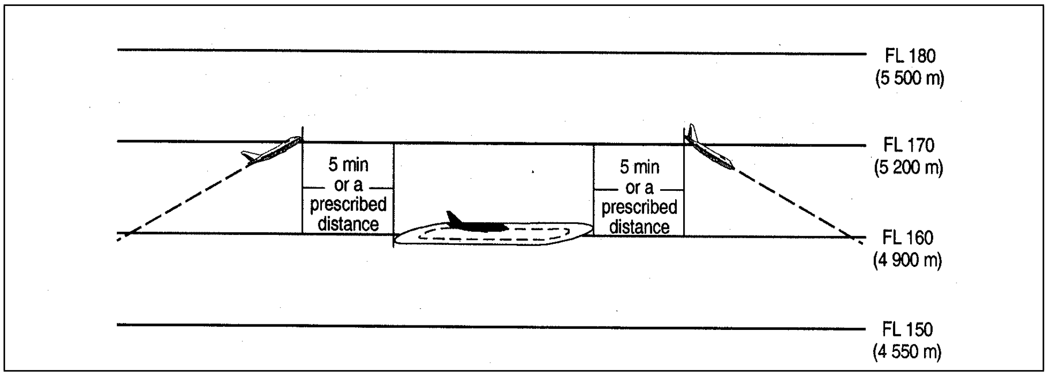
17 Holding Aircraft

17.1 When aircraft are being held in flight the following separation standards shall apply:

a) *Aircraft leaving a holding stack:* Vertical separation shall be maintained until the aircraft is at least 5 minutes flying time away from the holding aircraft‘s flight path.

b) *En-route aircraft approaching to join a holding stack:* Vertical separation shall be established at least 10 minutes before the joining aircraft is estimated to reach the holding aircraft‘s flight path.

17.2 Aircraft established in adjacent holding patterns shall, except when lateral separation between the holding areas exists, be separated by the applicable vertical separation minimum, unless the applicable holding patterns are published as deemed to be separated.



17.3 Except where lateral separation exists, vertical separation shall be applied between aircraft holding in flight and other aircraft, whether arriving, departing or en-route, whenever the other aircraft concerned are within 5 minutes flying time of the holding area.

18. Arrival/Departure Separation

18.1 The following separation is applicable to a departing flight in relation to an arriving flight and it does not prejudices the IFR separation as previously discussed.

18.2 The separation shall be applied when take-off clearance is based on the position of an arriving aircraft.

18.3 This separation shall only apply to aircraft departing from runways, the QDM of which is 45 degrees or more away from the reciprocal of the approach path of the arriving aircraft and no subsequent manoeuvre by the departing aircraft shall take it into the prescribed 45 degrees sectors.

18.4 An arriving aircraft shall be considered as:

18.4.1 An aircraft doing a procedure turn approach:

a) that has been cleared for the procedure turn approach as No. 1; and

b) has crossed the facility.

18.4.2 An aircraft in the associated let-down pattern;

a) that has been cleared for an instrument approach as No. 1; and

b) has crossed the facility for the last time.

18.4.3 An aircraft doing a straight in approach:

a) that has been cleared for a straight-in approach to the runway and is No. 1 to land,

b) is not more than 10 minutes or 20 NM, whichever is first, from touch-down; and

c) is established on the ILS localizer or extended centre - line of the runway.

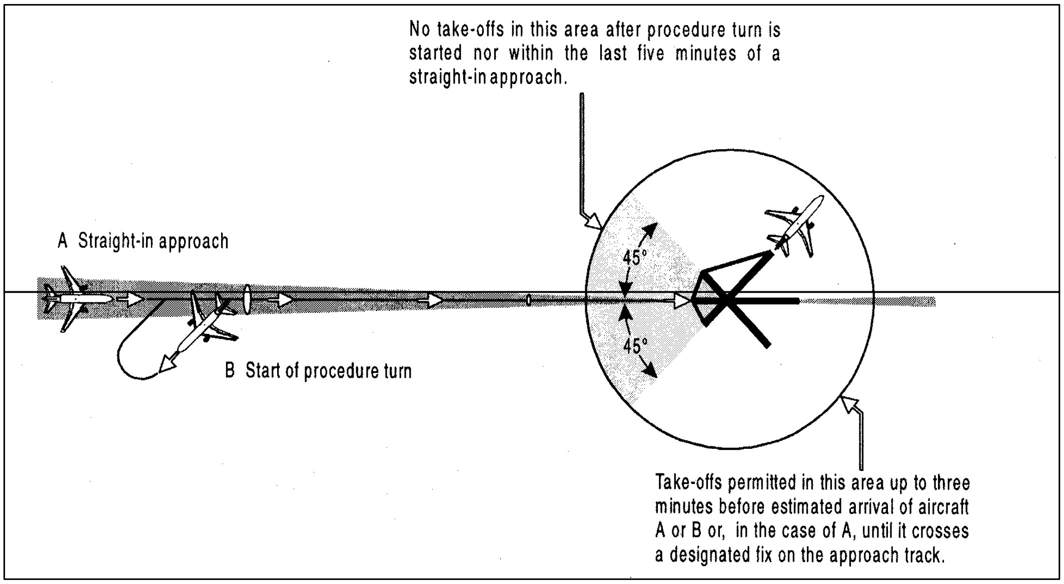
18.5 Departing aircraft may be permitted to take-off in any direction from any runway, other than in the 45 degrees stated in section 18.3, until;

a) the arriving aircraft is established on final approach at a point which is at least 3 minutes from the beginning of the instrument runway; or is established on the ILS glide-slope, whichever is earlier.

18.6 After this point in time no departure shall be permitted from any runway under IMC conditions.

18.7 This separation can be used when there is no ILS at the station using NDB/VOR approaches.

18.8 Any deviation from these requirements shall be accompanied by SACAA approved Safety risk assessment. 19.



19. Sector Separation between Arriving and Departing Aircraft (SA- CAA Approved).

19.1 The following sector separation may only be used between:

a) Aircraft departing from an aerodrome and aircraft inbound to the same aerodrome; or

b) Aircraft holding in a standard holding pattern associated with the landing facility at that aerodrome.

19.2 The sectors so prescribed must be clearly laid down in the Station Standing Instructions at the ATSU.

19.3 The holding facility shall:

a) Be situated in the arrival sector;

b) Be at least 3.5 NM from the departure runway

c) Threshold Be positioned on the extended centre-line of such runway.

19.4 The arrival sector shall be defined as 60 degree arcs on either side of the approach path to the instrument runway.

Note: The 60 degree arcs shall be measured from the holding facility.

19.5 Departure sector shall be defined as 60 degree arcs on either side of the extended centre-line of the instrument runway.

Note: The 60 degree arcs shall be measured from:

a) A point which is 4 NM from the up-wind end and on the extended centre-line of the instrument runway.

b) Where there is a facility situated not less than 3,5 NM from the up-wind end and on the extended centre-line of the instrument runway, the arcs may be measured from this point.

19.6 The inbound track of the holding pattern must be in line with the runway centre line.

19.7 Inbound traffic to the holding facility must be;

a) On tracks for the facility which are contained within the prescribed arrival sector; and

b) Shall under no circumstances be cleared beyond the facility.

19.8 Departing traffic must be departing from runways that will permit them to proceed on tracks directly into the prescribed departure sector.

19.9 VOR/DME may be used to establish an aircraft in a particular sector.

19.9.1 Where an aircraft's original track is not within the required sector the aircraft may be cleared to alter heading to intercept a track within the sector provided that the aircraft is equipped with functioning VOR/DME facility.

The procedure, as given above, may not be used for aircraft equipped with ADF or VOR only.

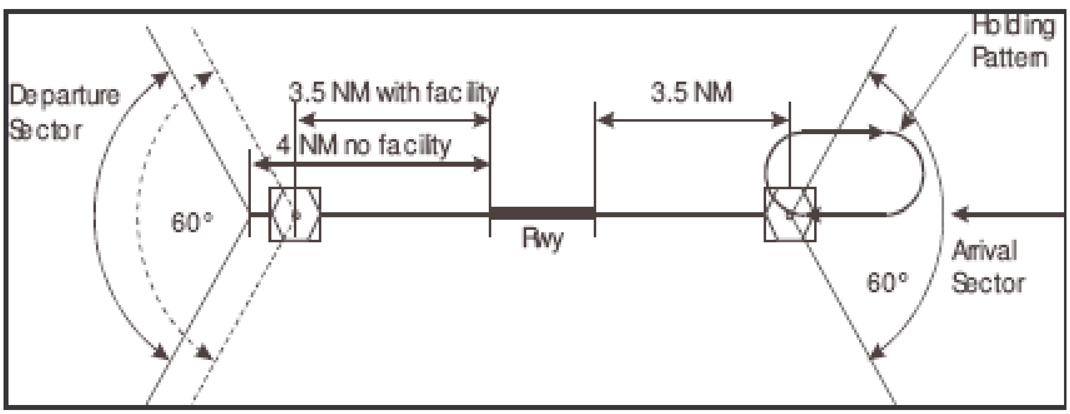
19.9.2 Aircraft in the arrival sector (including that part of the hold protruding into the in-between area) are deemed separated from departing aircraft in the departing sector.

19.10 Aircraft in the in-between area are not separated from either sector.

19.10.1 Until departing traffic has entered the departure sector it shall be vertically separated from holding or inbound traffic.

19.11 In circumstances where sector separation cannot be applied standard separation shall be used.

19.11.1 The sector separation, as given above, in no way prejudices the arrival/departure separation as given in this chapter.

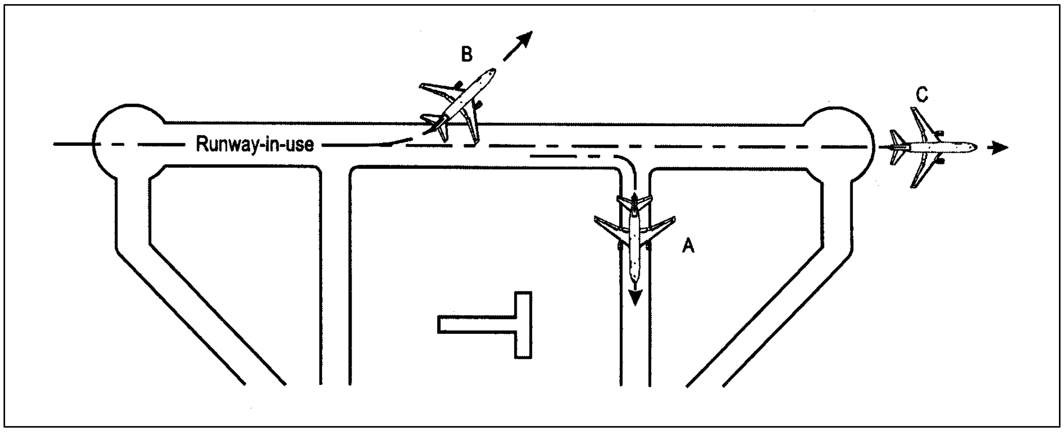


Section 6 Separation Methods and Minima

Chapter 5 Aerodrome Traffic Separation

1 **Departure**

1.1 A departing aircraft will not be permitted to commence take-off until the preceding departing aircraft has crossed the end of the runway-in-use, or has started a turn and all preceding landing aircraft are clear of the runway-in-use.



Separation between departing and arriving aircraft – Position limits to be reached by an aircraft (A) that has landed or a departing aircraft (B or C) before an arriving aircraft may be cleared to cross the threshold of the runway-in-use or a departing aircraft may be cleared for take-off.

1.2 An aircraft will be permitted to begin take-off when the preceding departing aircraft is seen to be safely airborne. The minimum distance, however, shall never be less than half the available take-off run.

1.3 The above separations may be reduced during daylight hours when VMC prevails. However, cognisance must be made with due respect to wake turbulence criteria and longitudinal separation minima.

1.4 Before the reduction of separation minima can be used, the following factors must be taken into consideration:

a) Runway length;

b) Aerodrome layout; and

c) Types of aircraft involved.

1.5 The reduction of the above separation minima will not apply:

a) Between a departing aircraft and a preceding landing aircraft;

b) Between sunset and sunrise;

c) When braking action may be adversely effected by runway contaminants;

d) In weather conditions preventing the pilot from making an early assessment of traffic conditions on the runway.

2 Separation of Landing Aircraft and Preceding Landing and Departing Aircraft Using the Same Runway.

2.1 A landing aircraft will not be permitted to cross the beginning of the runway on its final approach until the preceding departing aircraft has crossed the end of the runway-in-use, or has started a turn and all preceding landing aircraft are clear of the runway-in-use. To reduce the potential for misunderstanding, the landing clearance shall include the designator of the landing runway;

2.1.1 However, during daylight hours and when VMC conditions prevail, a landing aircraft may be permitted to cross the beginning of the runway on its final approach when the preceding departing aircraft is seen to be safely airborne.

2.2 A landing aircraft may not be permitted to touch down before the preceding landing aircraft, which has landed is clear of the runway.

2.2.1 However, during daylight hours and when VMC conditions prevail, this separation may be reduced as follows:

a) A landing aircraft may be cleared to land when there is reasonable assurance that the separation in Sec 6 Chap 5 para 1.1 and indicated in paragraphs 1.4,1.5 and 2.2 will exist when the aircraft crosses the runway threshold, provided that a clearance to land shall not be issued until a preceding landing aircraft has crossed the runway threshold.

b) Before this reduction of separation minima can be used the factors contained in Sec 6 Chap 5 para 1.1 and indicated in paragraphs 1.4 and 5 shall be taken into consideration.

c) Phraseology to be used when using the above reduced separation shall be" *Land After Beech 90 Ahead".*

2.3 A landing aircraft may be permitted to touch down before the preceding landing aircraft, which has landed, is clear of the runway.

2.4 Before this reduction can be used the following factors shall be taken into account:-

a) The runway is long enough to allow safe separation between the two aircraft and there is no evidence to indicate that braking action may be adversely affected;

b) The Controller is satisfied that the landing aircraft will be able to see the preceding aircraft, which has landed, clearly and continuously, until it is clear of the runway;

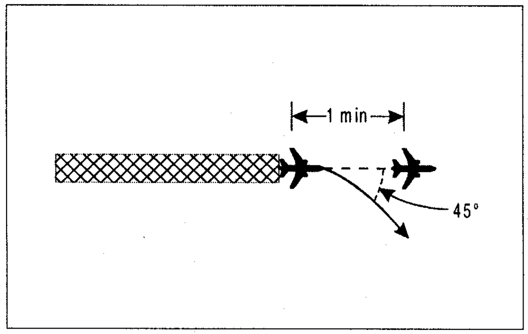
c) The aircraft involved shall be of a similar approach and landing performance; and

d) The pilot of the following aircraft is warned and reports the preceding aircraft in sight.

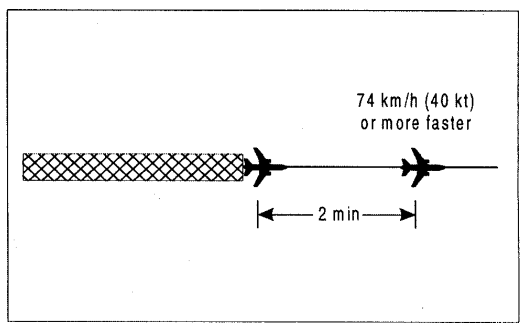
Note: *The responsibility for ensuring adequate separation rests with the pilot of the following aircraft.*

3 Minimum Separation between Departing Aircraft

3.1 One-minute separation is required if aircraft are to fly on tracks diverging by at least 45 degrees immediately after take-off so that lateral separation is provided.



3.2 Two minutes are required between take-offs when the preceding aircraft is 40 kts or faster than the following aircraft, both aircraft will follow the same track and neither aircraft is cleared to execute any manoeuvre that would decrease the 2 minute separation between them.

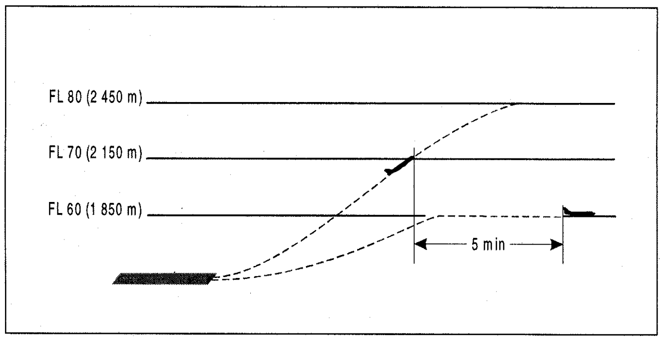


3.3 Five-minute separation shall be required while vertical separation does not exist if a departing aircraft will be flown through the level of a preceding departing aircraft and both aircraft propose to follow the same track, thereafter the aircraft will subsequently be separated either:

a) Vertically.

b) By tracks that diverge by 30^0 or more, or

c) By an ATS Surveillance System .



4 Wake Turbulence Separation

4.1 The spacing between aircraft, determined either by time or distance, is to be applied so that aircraft of a lower weight category do not fly through the wake of an aircraft of a higher category within the area of maximum vortices.

4.2 Wake turbulence separation must be considered when aircraft of different weight categories are operating into and out of an aerodrome during light wind conditions.

4.3 During calm or light wind conditions, vortices do not disperse easily and could remain in the runway area for an extended period of time. The vortices tend to sink to the landing/ take-off paths of following aircraft, or could drift across to a parallel runway.

4.4 Ground reflection causes vortices to travel horizontally over the ground away from one another.

4.5 All aircraft generate vortices at the wing tips as a consequence of producing lift. The heavier the aircraft and the slower it is flying, the stronger the vortex. This turbulence is the most dangerous during take-off, initial climb, final approach phase and could induce roll, impose changes in rate of climb or descent and may cause structural overloads.

4.6 Hazardous wake vortices begin to be generated by fixed wing aircraft from the point of rotation on departure and continues until the nose wheel touches down on landing.

4.7 When helicopters are in forward flight the downwash from the main rotor(s) is transformed into a pair of trailing vortices similar to the wing tip vortices of a fixed wing aircraft.

4.8 When the helicopter weight is transferred from the landing gear to the rotor a strong downwash is created in all directions, although this can be moved by the wind.

5 En-route and Intermediate Approach

5.1 No special longitudinal spacing based on time are required. When a Medium, Small or Light aircraft is positioned by ATS Surveillance System to cross behind or follow the same track as a Heavy aircraft, the minimum spacing shall be 5 miles.

6 *ATS Surveillance System* Wake Turbulence Separation Minima

The distance minima will apply when an aircraft follows or crosses behind***,*** at the same altitude or less than 1000 feet below, the wake generating aircraft in the arrival and departure phase.

Leading Aircraft	Following Aircraft	Minimum Distance
Super Heavy	Super Heavy	Not required(see note)
Super Heavy	Heavy	6 NM
Super Heavy	Medium	7 NM
Super Heavy	Light	8 NM
Heavy	Heavy	4NM(see note) 5NM
Heavy	Medium	6NM
Heavy	Light	
Medium	Heavy	5NM
Medium	Medium	5NM
Medium	Light	5NM
Light	Heavy	5NM
Light	Medium	5NM
Light	Light	5NM

Note: Where standard ATS Surveillance System separation minima and ATS Surveillance System wake turbulence separation minima, when applied together present different minima values, the larger of the two minima's shall be applied.

7 Arriving Aircraft – *Time-Based* Wake Turbulence Longitudinal Separation Minima

7.1 The aerodrome or approach unit shall not be required to apply wake turbulence separation but shall issue a caution for possible wake turbulence for:

a) Arriving VFR flights landing on the same runway as a preceding landing heavy or medium aircraft;

b) Between arriving IFR flights executing visual approaches when the aircraft has reported the preceding aircraft in sight and has been instructed to follow and maintain own separation from that aircraft.

7.2 The pilot-in-command of the aircraft concerned shall be responsible for ensuring that the spacing from a preceding aircraft of a heavier wake turbulence category is acceptable. If it is determined that additional spacing is required, the flight crew shall inform the ATSU accordingly, stating their requirements.

7.3 The following minima shall be applied to aircraft landing behind a Super, Heavy or a Medium aircraft:

Leading Aircraft	**Following Aircraft**	**Minimum Spacing - Time**
Heavy	Medium	2 minutes
Heavy or Medium	Light	3 minutes
A380-800 (Super)	Medium	3 minutes
A380-800 (Super)	Light	4 minutes

8 Departing Aircraft – *Time-Based* Wake Turbulence Longitudinal Separation Minima

8.1 The minimum spacing listed below is to be applied between successive aircraft, both IFR and VFR flights:

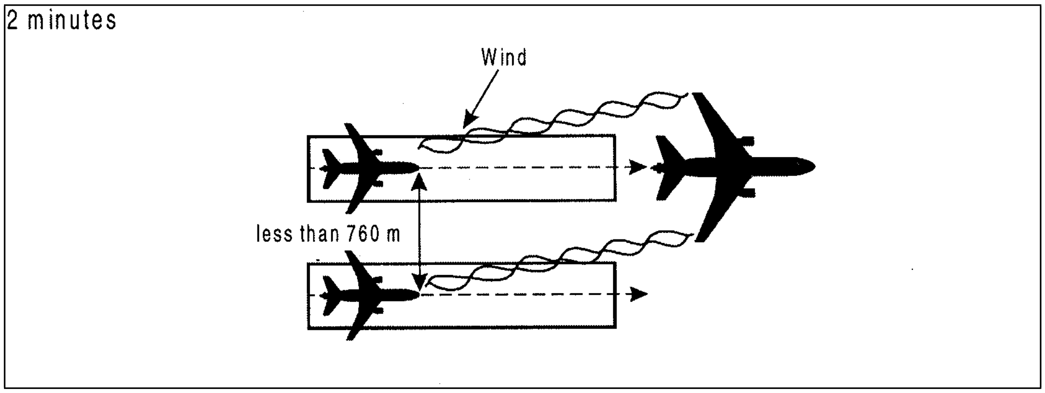
a) Aircraft departing from the same runway;

b) Parallel runways separated by less than 760 m;

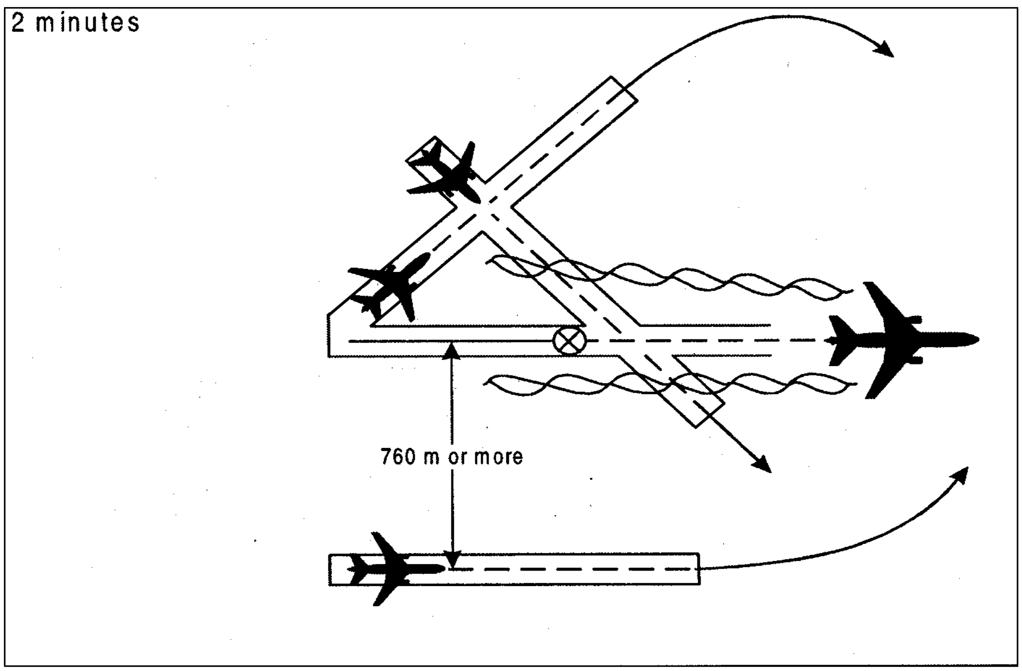
c) Crossing runways if the projected flight path of the first aircraft is at the same altitude or less than 1000 feet below;

d) Parallel runways separated by 760 m or more, if the projected flight path of the second aircraft will cross the projected flight path of the first aircraft at the same altitude or less than 1000 feet below.

Leading Aircraft	**Following Aircraft**		**Minimum time aircraft are airborne**
Super	Medium or Light	Departing from the same take-off position.	3 minutes
Heavy	Super, Medium or Light	Departing from the same take-off position.	2 minutes
Medium	Light	Departing from the same take-off position	2 minutes



Two minute separation for following aircraft (Refer to paragraph 8.1 a & b)



Two minute wake turbulence separation for crossing aircraft (Refer to paragraph 8.1 c & d)

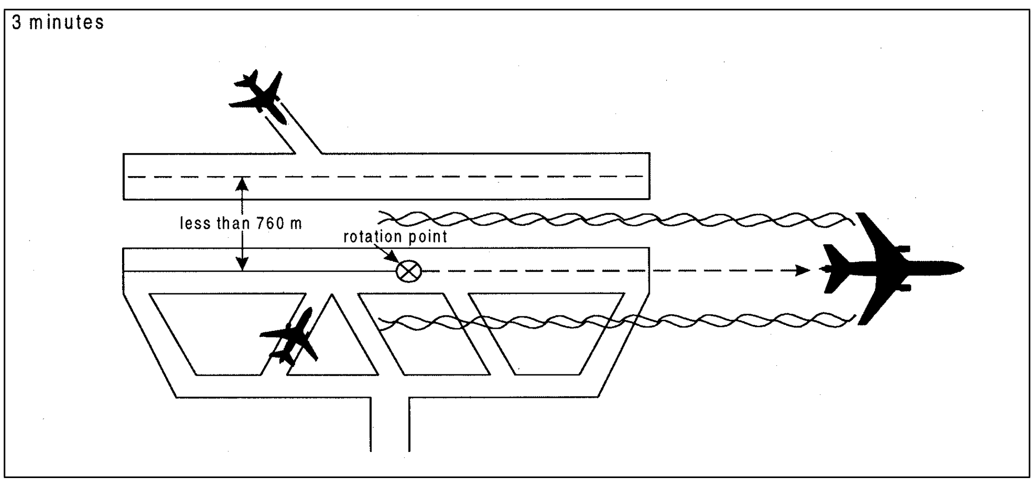
8.2 A separation minimum of three minutes shall be applied as per the table below in respect of aircraft departing from:

a) An intermediate part of the runway; or

b) An intermediate part of a parallel runway separated by less than 760 m.

Leading Aircraft	**Following aircraft**

Super	Medium Light	Departing from an or ntermediate ull length take-off take-Off point	
Heavy	Medium Light	Departing from an or intermediate take-off point.	
Medium	Light	Departing from an intermediate take-off point.	3 minutes



Three minute wake turbulence separation for following aircraft (Refer to paragraph 14.20.2)

9 Displaced Landing Threshold

Leading Aircraft	Following Aircraft	Minimum time aircraft are airborne	
Super Arrival	Medium or Light	Departure	3 minutes
Heavy Arrival	Medium or Light	Departure	2 minutes
Heavy Departure	Medium or Light	Arrival	2 minutes
Super Departure	Medium or Light	Arrival	3 minutes
Medium Arrival	Light	Departure	2 minutes
Medium Departure	Light	Arrival	2 minutes

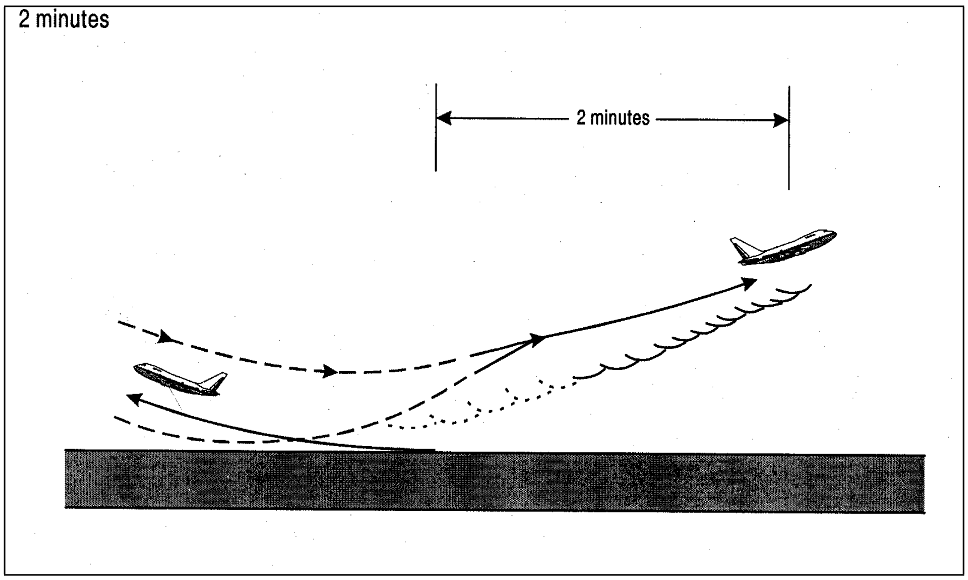
10 Opposite Direction

A separation minimum of 2 minutes shall be applied between a Light or Medium aircraft and a Heavy aircraft; and between a Light aircraft and a Medium aircraft when the heavier aircraft is making a low or missed approach and the light aircraft is:

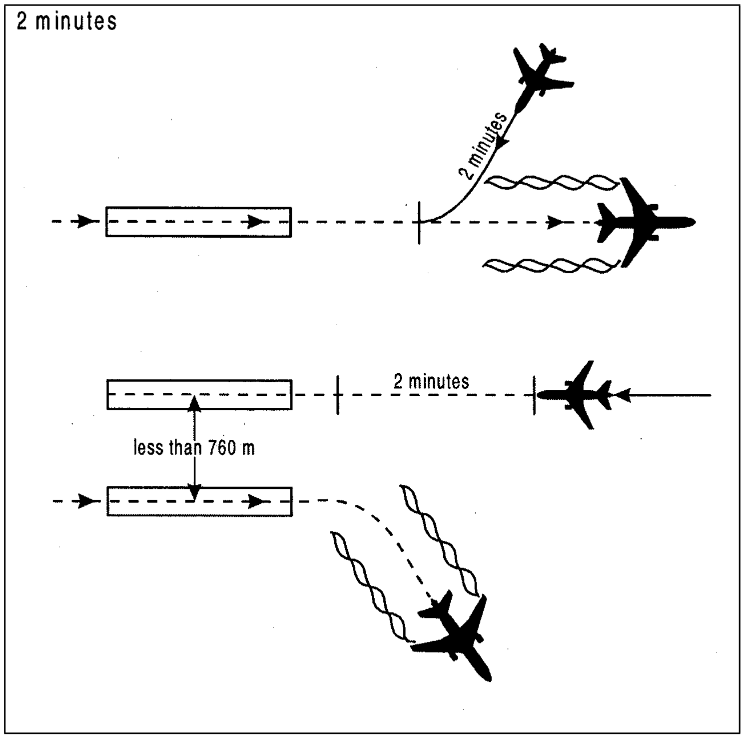
a) Utilising an opposite-direction runway for departure; or

b) Landing on the same runway in the opposite direction, or on a parallel opposite-direction runway separated by less then 760m.

Note: *A separation minima of 3 minutes shall be applied between a LIGHT or MEDIUM aircraft and an A380-800 aircraft when the A380-800 aircraft is making a low or missed approach.*



Two minute wake turbulence separation for opposite direction take-off. (Refer to paragraph 10a)



Two minute wake turbulence separation for opposite direction landing (Refer to paragraph 10 b).

11 Timing of Separation

Accurate Timing of wake turbulence separation is essential to ensure safety while achieving expeditiousness and efficiency. Either of the following two methodologies may be used when timing wake turbulence separation for consecutive departing aircraft.

a) timing the required wake separation time from the time the preceding aircraft is observed to commence the take-off roll until the following aircraft is allowed to commence the take-off roll ;

b) timing the required wake separation time from the time the preceding aircraft is observed to rotate until the time that the following aircraft rotates. (This technique requires the controller to anticipate the duration of the take-off roll of the following aircraft.) When the required wake separation time, minus the anticipated time for the following aircraft's take-off roll has passed, the following aircraft may be cleared to commence the take off roll).

Note: Units should develop a process of accurately anticipating the duration of the take-off roll for each type of aircraft correlated to the route flown by monitoring and recording the average duration of operations at the particular aerodrome. This information should be published in the local information manuals

12 Aircraft Initiating a Touch and Go

12.1 When an aircraft requests a clearance for a touch and go, the aircraft must be considered as making a departure from an intersection for vortex wake purposes. Therefore, a minimum of 3 minutes vortex spacing must be applied between the aircraft requesting the touch and go and any previous departing aircraft of a higher vortex wake category.

13 Helicopter Aerodrome Operations

13.1 When hovering or air taxiing, a helicopter directs a forceful blast of air downwards which then rolls out in all directions. To minimise this effect controllers should:

a) Instruct helicopters to ground taxi rather than air taxi when operating in areas where aircraft are parked or holding.

b) If air taxiing is imperative, helicopters must be routed to:

i) Avoid over flying parked aircraft or vehicles;

ii) Give the maximum possible clearance from other aircraft and loose ground equipment.

13.2 Helicopters must not be air taxied close to taxiways or runways where light aircraft operations (including light helicopter operations) are in progress. Vortex wake separation will be applied between helicopters air taxiing across runways and other aircraft, by considering the helicopter to be a departure from a crossing runway.

14 SEPARATION OF DEPARTING AIRCRAFT FROM ARRIVING AIRCRAFT

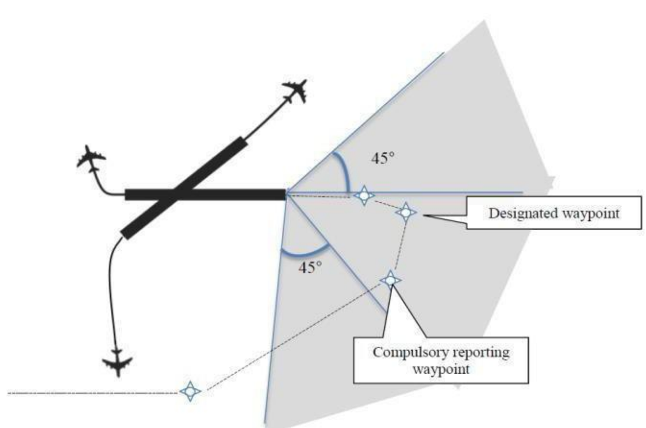
14.1 If an arriving aircraft is following an RNAV or RNP instrument flight procedure, a departing aircraft may take off on a departure path that is clear of the arrival protection area for the arriving aircraft (see Figure 5-41) provided:

a) vertical separation is applied until the arriving aircraft has reported passing the compulsory reporting waypoint on the instrument flight procedure, the location of such waypoint to be determined by the appropriate ATS authority;

b) the take-off takes place before the arriving aircraft crosses a designated waypoint on the instrument flight procedure, the location of such waypoint to be determined by the appropriate ATS authority; and

c) the departing aircraft remains clear of the arrival protection area until another form of separation is established.

Note. — The arrival protection area is defined as the shaded area extending from a line 45 degrees from the extended runway centreline to a line 45 degrees from an established compulsory reporting waypoint.



Rationale

a) The need for appropriate separation minima for use within the performance-based navigation (PBN) concept has been recognized by the Separation and Airspace Safety

Panel (SASP) and work is in progress to provide separation minima applicable to the various navigation specifications for various phases of flight.

b) One of the identified needs is to provide separation methods and minima for the separation of RNAV and RNP arriving aircraft from departing aircraft in the terminal airspace. This amendment proposal is intended to cater for this need.

c) PANS-ATM section 5.7 defines the separation of departing aircraft from arriving aircraft and the SASP identified this section as the appropriate location for the new separation method.

d) The proposed new separation minimum in 5.7.1.3 is intended for procedurally controlled terminal airspace.

e) The separation is based on a concept of establishing a 45 degrees protection area around the flight path of the arriving aircraft. This concept is already proven in the existing separation methods in PANS-ATM, section 5.7. The difference in applying this concept to a PBN arrival compared to the existing procedures in 5.7 is that the 45 degrees protection area trailing the arriving aircraft depends on which waypoint is chosen as a reference point; the protected airspace being measured from a waypoint that has been compulsorily reported by the arriving aircraft. This does not mean that the controller is required to plot a moving protection area ―on the fly‖. It simply means that, for certain arrival/departure combinations, the ATS authority has flexibility to design the airspace in such a way that a departure route becomes separated from the arrival route once the arriving aircraft has reported passing a specified waypoint, at which point the departing aircraft can then be released for take-off (see, for example, the ―southbound‖ departure in figure 5-41), or before the arrival aircraft has passed a designated waypoint.

Section 6 Separation Methods and Minima

Chapter 6 *ATS Surveillance System* Separation Minima

1 General

1.1 (a) The horizontal separation minimum based on ATS surveillance information shall be:

(i) 5 NM; or

(ii) if a higher minimum applies under Section 6, Chapter 5 (ATS Surveillance System - Wake Turbulence Separation Minima)— that higher minimum.

1.2. (b) The separation minimum in section 1.1 (a) may be reduced to not less than 3 NM if:

(i) a higher minimum under Chapter 5 (ATS Surveillance System - Wake Turbulence Separation Minima) does not apply; and

(ii) the relevant aircraft are in communication with, and under the control of, a terminal control unit or associated control tower; and

(iii) an ATS surveillance system and associated display system is in use which is demonstrably suitable for using 3 NM separation.

1.3 These separations only apply between known and identified targets and between such targets and known unidentified targets. In the case of an unknown, unidentified target, the separation minima shall be 10NM. Under no circumstances are primary returns, secondary returns or symbols allowed to overlap unless vertical separation has been applied prior to the reduction below the distances as tabled.

1.4 When it is known that an aircraft is subjected to unlawful interference or a similar emergency, aircraft should be separated from normal traffic, especially traffic below. Minor off-routings may also be considered when indications are that the aircraft is subject to possible technical failures, which would result in emergency descents.

2 Separation Application

2.1 Factors which the controller must take into account when determining the spacing to be applied in particular circumstances in order to ensure that the separation minimum is not infringed include aircraft relative headings and speeds, ATS Surveillance System technical limitations, controller workload and any difficulties caused by communication congestion. Larger separations than the prescribed minimum will also need to be applied whenever the possible effects of wake turbulence call for extra precautions, turbulence due to weather activity or, when runway vacation time by landing aircraft indicates the necessity of increased separation in the approach phase.

2.2 ATS Surveillance System separation shall be applied between identified aircraft when there is reasonable assurance that identification will be maintained.

2.3 Except when transfer of ATS Surveillance control is to be effected, procedural separation shall be established by an ATS Surveillance controller before an aircraft under ATS Surveillance control reaches the limits of the relevant area of responsibility, or before the aircraft leaves the area of ATS Surveillance System coverage.

2.4 In the event that the ATS Surveillance controller has been notified of a controlled flight entering or about to enter the airspace within which ATS Surveillance separation is applied, but has not identified the aircraft, he may continue to provide an ATS Surveillance service to identified aircraft

provided that:

a) The unidentified controlled flight is being operated by an aircraft of a type which may be expected to give an adequate return on the ATS Surveillance System in the airspace within which an ATS Surveillance separation is applied; and

b) An ATS Surveillance separation is maintained between the ATS Surveillance System - controlled flights and any other observed position indicator until either the unidentified controlled flight has been identified or that procedural separation has been established.

Note: The ATS Surveillance System separation procedures detailed previously must be used with extreme caution on the part of the ATS Surveillance controller, who should bear in mind the desirability of having available immediate direct-speech communication with the unidentified controlled aircraft at the latest, when it enters the area of jurisdiction of the ATS Surveillance controller.

2.5 ATS Surveillance separation may be applied between an aircraft taking off and a preceding departing aircraft or other ATS Surveillance controlled traffic provided there is reasonable assurance that the departing aircraft will be identified within 1NM from the end of the runway, and that, at the time, the required separation will exist.

2.6 ATS Surveillance separation shall not be applied between aircraft holding over the same holding point.

2.7 ATS Surveillance separation shall be provided between an aircraft under ATS Surveillance control and unknown aircraft within controlled airspace unless procedures detailed in Station Standing Instructions and the SA-AIP does not require this.

3. SID and STAR

The flight crew shall comply with published SID and STAR speed restrictions unless the restrictions are explicitly cancelled or amended by the controller.

Note 1. — Some SID and STAR speed restrictions ensure containment with RNAV departure or arrival procedure (e.g. maximum speed associated with a constant radius arc to a fix (RF) leg).

Note 2. — See 6.3.2.4 pertaining to clearances on a SID and 6.5.2.4 pertaining to clearances on a STAR.

Section 7 ATS Surveillance Procedures

Note: *This chapter should be read in conjunction with Separation Methods and Minima (Section 6).*

1 ATS Surveillance Services

1.1 Provision of Services

1.1.1 ATS surveillance services comprise:

a) Separation of arriving, departing and en route traffic;

b) Vectoring;

c) Position information to assist in the navigation of aircraft;

d) Monitoring traffic to provide information to procedural units;

e) Assistance to aircraft operating within controlled and uncontrolled airspaces where there is ATS surveillance coverage.

1.1.2 Before a controller provides any of the above ATS surveillance services he shall either:

a) Identify the aircraft, using either secondary or primary methods; or

b) Have had the identity of the aircraft transferred from another controller.

The act of identifying an aircraft does not imply that an ATS surveillance service is being provided.

1.1.3 An ATS surveillance system may also be used to provide the following, whether or not the aircraft has been identified:

a) Information on the position of aircraft likely to constitute a hazard;

b) Avoiding action,

c) Information about observed weather for pilots and other controllers and

d) Assistance to aircraft in emergency.

1.1.4 ATS surveillance services shall be provided to the maximum extent practicable to cover the operational requirement subject only to workload, communications or equipment capability.

1.1.5 Regardless of the type of airspace, or the air traffic service being provided, nothing shall prevent a controller from taking action he considers appropriate if he believes a risk of collision exists.

1.16 When ATS Surveillance is being used in the provision of ATS traffic instructed to hold shall have their ATS Surveillance control service terminated prior to entering the holding pattern. When an aircraft is the only aircraft in that hold radar service may be retained.

1.2 Type of Service

1.2.1 The airspace within which the aircraft is flying determines the type of radar service available, as shown in the table below.

Type of Airspace	**ATS surveillance service**
Controlled Airspace.	Control Service.
* Outside controlled airspace, on Advisory Routes and within ATS surveillance Advisory service areas.	Advisory Service or Information Service.

* When providing a service to aircraft within these types of airspace it is important that no confusion exists, between the controller and the pilot, as to:

a) Whether or not a radar service is being provided; and

b) The type of radar service being given.

1.2.2 Outside controlled airspace it is the responsibility of the pilot to request the radar service he requires. However if the pilot fails to specify the type of service the controller shall ask the pilot which radar service he requires. The controller shall also obtain a readback of the service from the pilot.

1.2.3 The controller should endeavour to provide the radar service requested. If he cannot, then he should whenever possible, offer an alternative service.

1.2.4 Pilots shall be advised when a radar service commences, terminates or changes when:

a) They are operating outside controlled airspace; or

b) They cross the boundary of controlled airspace.

1.3 **ATS Surveillance Service**

1.3.1 An ATS surveillance service may be provided to aircraft operating IFR, SVFR or VFR. When providing this service, controllers shall issue instructions to which:

a) Pilots of aircraft operating IFR are required to comply; and

b) Pilots of aircraft operating SVFR or VFR will comply unless they advise the controller otherwise.

1.3.2 Before an aircraft enters controlled airspace the controller must ensure he knows under which flight rules the pilot will be operating.

1.4 **Radar Advisory Service**

1.4.1 A Radar Advisory Service (RAS) is an air traffic radar service in which the controller shall provide advice necessary to maintain prescribed separation between aircraft participating in the advisory service, and in which he shall pass to the pilot the bearing, distance and, if known, level of conflicting non-participating traffic, together with advice on action necessary to resolve the confliction. Where time does not permit this procedure to be adopted, the controller shall pass advice on avoiding action followed by information on the conflicting traffic. Even though the service is an advisory one, controllers shall pass the 'advice' in the form of instructions. Under a RAS the following conditions apply:

a) The service shall only be provided to flights under IFR irrespective of meteorological conditions.

b) Controllers can expect the pilot to accept radar track information or level allocations which may require flight into IMC.

c) There is no legal requirement for a pilot flying outside controlled airspace to comply with instructions because of the advisory nature of the service. However, should a pilot choose not to comply with advisory avoiding action then he will become responsible for his own separation and any avoiding action that may subsequently prove necessary.

d) The controller will be advised before a pilot changes heading or level.

e) Controllers shall pass avoiding action instructions to resolve a confliction with non-participating traffic and, wherever possible, shall seek to achieve separation which is not less than 5 NM or 1000 feet, except when specified otherwise by the CAA. However, it is recognised that in the event of the sudden appearance of unknown traffic, and when unknown aircraft make unpredictable changes in flight path, it is not always possible to achieve these minima.

f) Controllers shall continue to provide information on conflicting traffic until the confliction is resolved.

g) ATSUs providing a RAS shall set a level or levels at or above which the aircraft will remain within the limits of radar cover and be provided with the requisite terrain clearance. Below this level or levels a RAS shall be refused or terminated.

1.5 **Radar Information Service**

A Radar Information Service (RIS) is an air traffic radar service in which the controller shall inform the pilot of the bearing, distance and, if known, the level of the conflicting traffic. No avoiding action shall be offered. The pilot is wholly responsible for maintaining separation from other aircraft whether or not the controller has passed traffic information. Under a RIS the following conditions apply:

a) The service may be requested under any flight rules or meteorological conditions.

b) The controller shall only update details of conflicting traffic, after the initial warning, at the pilot's request or if the controller considers that the conflicting traffic continues to constitute a definite hazard.

c) The controller may provide radar track information for the purpose of tactical planning or at the request of the pilot. However, radar track information shall not be provided to maintain separation from other aircraft, which remains the responsibility of the pilot. There is no requirement for a pilot to accept radar track information.

d) The controller will be advised before a pilot changes level, level band or route.

e) RIS may be offered when the provision of RAS is impracticable.

f) Should a pilot request avoiding action, this shall be treated as a request for a change of radar service.

g) Request for RIS to be changed to a RAS shall be accepted subject to the controller's workload; prescribed separation shall be applied as soon as practicable. If a controller cannot provide a RAS then he shall continue to offer a RIS.

h) For manoeuvring flights which involve frequent changes of heading or level, RIS may be requested by the pilot or offered by the controller. Information on conflicting traffic shall be passed with reference to cardinal points. The controller will be advised of the level band within which the pilot wishes to operate. The pilot is responsible for selecting the manoeuvring area, but may request the controller's assistance in finding a suitable location. The controller may suggest re-positioning on his own initiative, but the pilot is not bound to comply.

Note: *A manoevering flight can be considered as either training, aerial survey, operation of UAS etc.*

i) ATSUs providing a RIS shall set a level or levels at or above which the aircraft will remain within the limits of radar cover and be provided with the requisite terrain clearance. Below this level, or levels, vectors shall not be provided and the pilot becomes responsible for his own terrain clearance.

Note: *If a controller considers it appropriate to vector RIS traffic then this shall be done in accordance with the above procedures. However, controllers must always bear in mind that a pilot could well refuse a vector as it may conflict with the purpose of the flight and so reliance should not be placed on being able to solve all tactical conflictions by the use of headings.*

1.6 Limiting a Service

1.6.1 Outside controlled airspace in circumstances where controllers cannot continue to provide the following primary requirements:

a) Traffic information and traffic avoidance in respect of all conflicting unknown aircraft for a radar advisory service; and

b) Traffic information in respect of all conflicting unknown aircraft for a radar information service, controllers may elect to continue to give the service by limiting the extent to which it is provided.

1.6.2 Controllers must inform pilots when they limit the service and ensure that pilots are made fully aware of the implications of any limitation.

1.6.3 In particular the service should be limited when:

a) The aircraft is operating within 10 miles of:

i) The edge of the radar display;

ii) Weather clutter; or

iii) Permanent echoes.

b) The aircraft is operating in an area of high traffic density;

c) The aircraft is operating near to the limits of radar coverage; or

d) The service is being provided using secondary radar only.

2 Establishment of Radar identity

2.1 Before providing an ATS surveillance service to an aircraft, the identity of the aircraft shall be established and will be maintained until the termination of the service.

2.2 As soon as a controller has identified an aircraft he is to inform the pilot, according to the circumstances;

a) That his aircraft has been identified;

b) The type of radar service being provided where appropriate;

c) The position of the aircraft.

3 Identification using Primary Radar

3.1 One of the following methods can be employed when primary radar is used to identify aircraft. Direction finding equipment should be used to assist the identification provided it has been approved for such use.

3.1.1 The Turn Method

3.1.1.1 An aircraft may be identified by ascertaining its heading and, following a period of track observation, correlating the observed movement of a particular radar echo with:

a) The acknowledged execution of an instruction to alter heading by at least 30°,

b) One or more changes of heading of at least 30°, as instructed by another controller.

c) One or more changes of heading of at least 30° reported by the pilot.

3.1.1.2 A turn for identification does not constitute a radar service. However, controllers should take into consideration, terrain, other returns, radar coverage and the rules of the air before instructing an aircraft to alter heading.

3.1.1.3 In using the turn method the controller shall:

a) Verify that the movements of not more than one radar echo correspond with those of the aircraft.

b) Ensure that the manoeuvre(s) will not carry the radar echo outside the coverage of the radar display.

c) Exercise caution particularly when employing this method in areas where changes of aircraft heading are commonly made as a navigational routine.

3.2 Identification Using either Primary or Secondary Radar

3.2.1 Departing Aircraft Method

3.2.1.1 By observing and correlating the radar return of a departing aircraft to a known airborne time. Identification is to be achieved within one mile of the end of the runway unless otherwise authorised by the CAA.

3.2.1.2 Particular care should be taken to avoid confusion with aircraft over-flying the aerodrome, making a missed approach, departing from an adjacent runway or holding overhead the aerodrome.

3.2.2 Position Report Method

3.2.2.1 By correlating a particular radar return with a report from the pilot that the aircraft is:

a) Over an exact reporting point which is displayed on the radar map; or

b) At a particular radial and DME from a co-located VOR/ DME or TACAN (DME). The source facility must be displayed on the radar map; or

c) Over a notified visual reference point or prominent geographical feature, in either case approved for the purpose and displayed on the radar map, provided that the flight is operating with visual reference to the surface and at a height of 3000 ft or less above the surface.

3.2.2.2 The identification must follow a period of track observation sufficient to enable the controller to compare the movement of the radar echo with the pilot's reported route. The reported position and level of the aircraft must indicate that it is within known radar cover.

3.2.2.3 This method must be reinforced by an alternative method if there is any doubt about the identification because of:

a) the close proximity of other returns; or

b) Inaccurate reporting from aircraft at high level or some distance from navigational facilities.

3.3 **Identification using Secondary Radar**

3.3.1 Controllers should use secondary surveillance radar Mode A to identify aircraft whenever suitable equipment is available. One of the following methods shall be employed:

a) Observing the pilot's compliance with the instruction to select a discrete four digit code;

b) Recognising a validated four digit code previously assigned to an aircraft callsign. When code/callsign conversion procedures are in use, and the code/callsign pairing can be confirmed, the callsign displayed in the data block may be used to establish and maintain identity;

c) Observing an IDENT feature when it has been requested. Caution must be exercised when employing this method since simultaneous requests for SPI transmissions within the same area may result in misidentification. Aircraft displaying the conspicuity code are not to be identified by this method.

d) Observation of compliance with an instruction to change transponder mode.

4 Validation for Mode A Codes

4.1 A controller assigning any Mode A code must validate the code by checking as soon as possible, either by direct reference to his display or with the assistance of another controlling agency, that the data displayed corresponds with the code which has been assigned.

4.2 The code must be checked by one of the following methods:

a) Instructing the aircraft to squawk the assigned code and observing that the correct code numbers are associated with the radar return;

b) Instructing the aircraft to 'squawk IDENT' and simultaneously observing that the correct code numbers are associated with the radar return;

c) Matching a radar return already identified by primary radar with the assigned code for the flight.

4.3 If the code readout does not correspond to that assigned, the pilot is to be instructed to reset the assigned code. Where this fails to achieve display of the assigned code then the pilot is to be instructed to select code A0000. If a corrupt code still exists the pilot should normally be instructed to switch off the transponder. However, the corrupt code may be retained to assist identification and tracking provided the Mode C has been verified. Associated air traffic control units are to be informed of the retention of corrupt data.

4.4 Special Purpose Codes

Controllers should be aware of the special purpose codes which pilots may select such as the emergency codes 7500, 7600 and 7700.

4.5 Conspicuity Code

4.5.1 The conspicuity code, 2000, together with Mode C should be displayed by all suitably equipped aircraft unless:

a) They have been assigned a discrete code;

b) They are flying in an aerodrome traffic pattern below 3000 feet; or

c) They are transmitting on one of the special purpose codes.

5 Transfer of Radar Identity

5.1 If SSR is not available, a controller may transfer the identity of an aircraft to another controller by any of the following methods:

a) Direct designation (pointing) of the radar return where two displays are adjacent. If the information on the two displays is derived from separate radar heads the transferring controller must ensure that the returns on both displays correlate before using this method. If parallax is likely to cause an error, an alternative method is to be used;

b) Designation of the radar return in terms of a direction and distance from a common reference point (geographical position or navigational facility) accurately indicated on both displays. The radar return, as seen by the accepting controller, must be within 3 miles of the position stated. The distance between the aircraft and the reference point must not exceed:

i) 30 miles, if the aircraft is flying along a published ATS route or direction is given as a bearing in degrees;

ii) 15 miles in other circumstances.

c) Designation of the radar return by positioning an electronic marker or symbol so that only one radar return is thereby indicated and there is no possible doubt of correct identification.

6 Lost Identity

6.1 Except as described in paragraph 6.2 below, a pilot shall be advised whenever radar identification is lost. The pilot shall be informed accordingly and when applicable, appropriate instructions issued.

6.2 When using secondary radar, controllers may be temporarily unable to read the data blocks associated with aircraft due to overlapping or garbling e.g. in holding areas. Although this constitutes a loss of identification, the pilot need not be advised that identification has been lost if the controller anticipates that identification will be re-established immediately the overlapping or garbling ceases.

7 Position Information

7.1 Except if the pilot reports the position of the aircraft and this position correlates with the position according to Surveillance, aircraft should be informed of their position in the following circumstances:

a) On first identification;

b) When the pilot requests the information;

c) When the aircraft is flying off the correct track;

d) When an aircraft estimate differs significantly from the radar controller's estimate based on radar observation;

e) When the pilot is instructed to resume his own navigation following vectoring.

7.2 Position information shall be passed in one of the following forms:

a) A well known geographical position;

b) Bearing (using points of the compass) and distance from a known position;

c) Magnetic track and distance to a reporting point, an en-route navigational aid, or an approach aid displayed on the radar video map;

d) Lat. and Long. (Only when authorised in the station standing instruction manual);

e) Distance from touchdown when the aircraft is being vectored for final approach.

8 Termination of ATS surveillance service

8.1 When aircraft are being transferred from one ATS surveillance unit or sector to another, and there is reasonable assurance that an ATS surveillance service will be continued, radar service need not be terminated, provided that procedures for continued services are in place.

8.2 In the case of aircraft vectored for an ILS approach, radar service need not be terminated when such aircraft are released to the aerodrome controller.

8.3 Radar control service must be terminated in all other cases where:

a) Aircraft are to be transferred to a procedural unit;

b) Before they leave ATS surveillance cover;

c) When transferred to an adjacent FIR, where alternative procedures do not exist; or as stipulated in the AIP; or

d) Where radar control service has been completed.

8.4 Radar controllers must ensure that procedural separation is established before the termination of an ATS surveillance service.

9 Use of Mode C for Vertical Separation

9.1 Mode C Responses

9.1.1 When SSR is used to assess vertical separation the Mode C responses are to be continually monitored to ensure that the vertical distance is never less than the prescribed minimum.

9.1.2 Minimum vertical separation may be applied between verified Mode C transponding aircraft provided the intentions of both aircraft are known to a controller because either:

a) They are under his control;

b) They have been co-ordinated; or

c) They are operating in accordance with established agreements.

9.1.3 Vertical separation using Mode C is not to be applied against aircraft transponding Mode A0000.

9.2 **Verification of Mode C**

9.2.1 Controllers are to verify the accuracy of Mode C data, once the aircraft has been identified and the Mode A validated, by checking that the readout indicates the tolerance value as specified in paragraph 9.3.1 reported by the pilot. If the aircraft is climbing or descending, the pilot is to be instructed to give a precise report as the aircraft passes through a level.

9.2.2 Verification may be achieved with the assistance of an air traffic services unit with which the aircraft is in contact.

9.2.3 A Mode C readout can be assumed to have been verified if it is associated with a deemed validated Mode A code.

9.2.4 There is no requirement to monitor level readouts when Mode C information is not being used to provide vertical separation. However, if a controller observes a discrepancy the pilot is to be asked to confirm his altimeter setting and level. If the discrepancy remains, the pilot is to be instructed to switch off Mode C. If independent switching of Mode C is not possible the pilot is to be instructed to select Code A0000.

9.3 **Level Assessment using Mode C**

9.3.1 The following criteria apply when assessing the vertical position of a Mode C transponding aircraft:

a) An aircraft may be considered to be at an assigned level provided that the Mode C readout indicates 300 feet or less from that level;

b) An aircraft which is known to have been instructed to climb or descend may be considered to have left a level when the Mode C readout indicates a change of 400 feet or more from that level and is continuing in the anticipated direction;

c) An aircraft climbing or descending may be considered to have passed through a level when the Mode C readout indicates that the level has been passed by 400 feet or more and continuing in the required direction;

d) An aircraft may be considered to have reached an assigned level when three successive Mode C readouts indicate 300 feet or less from that level.

Note: *In RVSM airspace the vertical tolerance value shall be 200 feet.*

9.3.2 Mode C information is normally displayed as a flight level but on some ground equipment the vertical position of an aircraft flying below a pre-determined datum is displayed as an altitude.

10 Transfer of Control

10.1 The transfer of responsibility for an aircraft from one radar controller to another may be effected provided that:

a) Satisfactory two-way speech communication is available between them;

b) The radar identity has been transferred to the accepting radar controller, or has been established by him; and

c) The accepting radar controller is informed of any level or vectoring instructions applicable to the aircraft at the stage of transfer.

10.2 If the route of the aircraft is not known the transferring controller is to pass the observed track or reported aircraft heading to the accepting radar controller.

10.3 Silent Handover between ATS Surveillance Sectors

10.3.1 Silent Radar handover is to facilitate a reduction in ATC and pilot workload as a result of the radar coverage provided to the affected sectors where over-lapping radar coverage is provided by two or more independent radar sensors.

10.3.2 In the case of radar control transfers between sectors, acceptance of the electronic hand-off of the SSR label will serve as acceptance of radar separation between those flights which have been liaised as being under radar control between those two sectors, either via procedures contained in LOPs or directly liaised.

11 Vectoring

11.1 **Responsibility**

11.1.1 The controller has complete freedom to instruct an aircraft to turn in any direction as dictated by circumstances but when avoiding unknown aircraft the rules of the air should be observed if practicable.

11.1.2 Aircraft flying outside controlled airspace are not obliged to follow instructions given by air traffic control, but where the pilot of an aircraft accepts a radar advisory service, the radar controller can expect that his instructions will be followed.

11.1.3 Unless an aircraft has planned to leave controlled airspace, it is not to be vectored outside the horizontal or vertical limits, except:

a) When an emergency situation arises requiring the aircraft to be vectored outside controlled airspace;

b) When avoiding adverse meteorological conditions; the circumstances must be explained to the pilot before the aircraft leaves controlled airspace;

c) When specifically requested by the pilot.

11.1.4 When vectoring an IFR flight and when giving an IFR flight direct routing which takes the aircraft off an ATS route, the controller shall issue clearances such that the prescribed obstacle clearance will exist at all times until the aircraft reaches the point where the pilot will resume own navigation.

Note: *When an IFR flight is being vectored, the pilot may be unable to determine the* *aircraft's exact position in respect to obstacles in this area and consequently the altitude which provides the required obstacle clearance.*

11.1.5 Although aircraft operating in controlled airspace are deemed to be separated from unknown aircraft flying in adjoining uncontrolled airspace, the controller should aim to keep the aircraft under his control at least two miles within the boundary where possible. Unpredictable manoeuvres by unknown aircraft can easily erode separation.

11.2 General provisions for controllers'

11.2.1 Prior to, or upon commencement of, vectoring for approach, the pilot shall be advised of the type of approach as well as the runway to be used.

11.2.2 The controller shall advise an aircraft being vectored for an instrument approach of its position at least once prior to commencement of final approach.

11.2.3 When giving distance information, the controller shall specify the point or navigation aid to which the information refers.

11.2.4 The initial and intermediate approach phases of an approach executed under the direction of a controller comprise those parts of the approach from the time vectoring is initiated for the purpose of positioning the aircraft for a final approach, until the aircraft is on final approach and:

a) Established on the final approach path of a pilot-interpreted aid; or

b) Reports that it is able to complete a visual approach; or

c) Ready to commence a surveillance radar approach; or

d) Transferred to the precision radar approach controller.

11.2.5 Aircraft vectored for final approach should be given a heading or a series of heading calculated to close with the final approach track. The final vector shall enable the aircraft to be established in level flight on the final approach track prior to intercepting the specified or nominal glide path if an ILS or radar approach is to be made, and should provide an intercept angle with the final approach track of 45 degrees or less.

11.3 VOR/DME Holding

When an aircraft inbound to a VOR/DME holding pattern is vectored away from a standard VOR radial, the controller must either provide magnetic track and distance information on instructing the aircraft to resume own navigation or issue vectoring instructions to intercept the appropriate radial to the holding or routeing fix.

12 Navigational Assistance

12.1 An identified controlled aircraft observed to deviate significantly from its intended trajectory or designated holding pattern should be informed immediately. Appropriate action should be taken if, in the opinion of the controller, such deviation is likely to affect other controlled flights.

12.2 Except when transfer of radar control is to be effected, navigational assistance should normally be provided in such a manner as to ensure that the aircraft will not be less than 2.5 NM from the limit of the controlled airspace or sector unless local arrangements have been made so as to ensure separation minima will exist between radar-controlled aircraft operating in adjoining areas or sectors.

13 Weather Avoidance

13.1 Action by Controller

Whenever possible, controllers should offer the following advice and assistance to pilots when adverse meteorological conditions is observed on radar or reported by aircrew:

a) Advise the pilot when the radar display indicates that there is adverse meteorological conditions ahead of the aircraft;

b) Offer and supply circumnavigational assistance;

c) Advise the pilot if routeing around adverse meteorological conditions will take the aircraft outside controlled airspace. The pilot will decide whether to accept the re-routeing;

d) Provide navigational assistance if necessary;

e) Provide radar advisory service if required.

13.2 **Action by Pilot**

13.2.1 When operating in controlled airspace the pilot is required to obtain a clearance for any proposed detours due to adverse meteorological conditions.

13.2.2 If weather avoidance takes an aircraft outside controlled airspace, the pilot is required to obtain a clearance before rejoining.

14 Terrain Clearance

14.1 The objectives of air traffic services do not include prevention of collision with terrain except when an IFR flight is being vectored by radar.

14.2 Radar controllers shall at all times be in possession of full and up-to-date information regarding the elevation of terrain and fixed obstructions within their area of responsibility. Radar Terrain Charts shall be available to all ATSUs where a radar service is being provided, showing all outstanding terrain features and obstacles. Minimum radar sector altitudes/levels shall be promulgated in the station standing instruction manual.

14.3 Controllers are to ensure that levels or altitudes assigned to:

a) IFR flights in receipt of a radar control service,

b) Flights in receipt of a radar advisory service,

c) Controlled VFR flights in terminal areas, and

d) Flights in receipt of a ATS surveillance information service and receiving vectors; provide adequate terrain clearance for the phase of flight as shown in the table below.

Phase	Minimum Terrain Clearance
En-route	1,500 feet above any fixed obstacle which lies within 15 NM of the centre line of the airway or ADR. Provided that when an ADR is of a greater width than 30 NM, terrain clearance shall be provided as for ‘other flights’.
Initial/intermediate Approach	
a) Distance greater than 15NM from the Radar Head.	1,500 feet above any fixed obstacle within 5 NM of the aircraft.
b) Distance 15NM or less from the Radar Head.	1,000 feet above any fixed obstacle within 5NM of the aircraft.
Departure	Radar terrain clearance shall be established as soon as possible after departure in accordance with the above minima. Under no circumstance should aircraft be vectored toward an obstruction unless the minima given for initial/intermediate can be achieved before the prescribed distances are reduced.
Other flights	1,500 feet above any fixed obstacle within 30 NM of the aircraft.

14.4 Radar controllers have no responsibility for the terrain clearance of, and shall not assign levels to, aircraft:

a) In receipt of a radar information service when not subject to radar vectors; or

b) Operating SVFR or VFR within controlled airspace which accepts radar vectors.

14.5 Air traffic control units providing a radar advisory service outside controlled and advisory airspace shall set a level, or levels, below which the service shall be refused or terminated.

15 Unknown Aircraft

15.1 A radar return which cannot be associated with an aircraft known by the radar controller to be operating within the airspace concerned shall be considered to represent an unknown aircraft.

15.2 Action to be taken by controllers to avoid unknown aircraft in various types of airspace is tabulated below:

Type of Airspace	Action to be taken by controller
Classes A to E. (Controlled Airspace)	Avoiding action or traffic information shall not be passed unless it is ATS surveillance system derived. In the case of an unknown, unidentified target, the minimum separation shall be 10 NM.
Class F and G	Under an Advisory Service, pass traffic information followed by advice on avoiding action.* When providing an Information Service, traffic information is to be passed but traffic avoidance is NOT to be offered.

*When, due to the sudden appearance of unknown traffic, there is no time to adopt this procedure, advice on avoiding action may be given first followed by traffic information. It is recognised that in this situation, and when unknown aircraft make unpredictable changes in flight path, it is not always possible to provide standard radar separation.

15.3 A pilot who does not wish to comply with the advice on avoiding action becomes responsible for his own separation and any avoiding action which may subsequently become necessary.

16 Traffic Information

16.1 Traffic information shall include the following:

a) Bearing from the aircraft in terms of the 12 hour clock (when the aircraft is turning, direction of the unknown aircraft by compass points);

b) Distance from the aircraft in miles;

c) Direction in which the unknown aircraft is proceeding, e.g. 'traffic is opposite direction/crossing left to right', etc.

d) Height information when available, this may include the unverified mode C of unknown aircraft;

16.2 Under some circumstances, controllers may consider it prudent to inform a pilot of other traffic which is separated from his aircraft. In such cases, to prevent any possible confusion, no reference should be made to the actual level of the other aircraft. If necessary, the pilot should be informed that the other aircraft is '(number) thousand feet above/below'.

17 Situation Display

17.1 A situation display providing surveillance information to the controller shall, as a minimum, include position indications, map information required to provide ATS surveillance services, and where available, information concerning the identity of the aircraft and the aircraft level.

17.2 The ATS surveillance system shall provide for a continuously updated presentation of surveillance information, including position indications.

17.3 Position indications may be displayed as:

a) Individual position symbols, e.g. PSR, SSR and ADS-B ***or MLAT*** symbols, or combined symbols;

b) PSR blips;

c) SSR responses.

17.4 When applicable, distinct symbols should be used for presentation of:

a) Unintentionally duplicated SSR codes and/or aircraft identifications that are unintentionally duplicated;

b) Predicted positions for a non-updated track; and

c) Plot and track data.

17.5 Where surveillance data quality degrades such that services need to be limited, symbology or other means shall be used to provide the controller with an indication of the condition.

17.6 Labels shall, as a minimum, include information relating to the identity of the aircraft e.g. SSR code or aircraft identification and pressure altitude-derived level information. This information may be obtained from SSR Mode A, SSR Mode C, SSR Mode S and/or ADS-B.

17.7 Labels shall be associated with their position indications in a manner precluding erroneous identification by or confusion on the part of the controller. All label information shall be presented in a clear and concise manner.

17.8 In the event of clutter being present on the ASD display, the controller shall decide as early as possible if the extent of the clutter is such that an ATS surveillance service should be terminated, or not provided. He shall advise all aircraft under his control and shall provide procedural separation between these aircraft before withdrawing ATS surveillance services.

17.9 In the case of an aircraft approaching to land, the controller shall decide whether:

a) An ATS surveillance approach is impracticable; or

b) An ATS surveillance approach could be carried out, but there may be a possibility of ATS surveillance contact being lost.

17.10 In the case of (a) he shall inform the aircraft that a radar approach is not possible owing to clutter.

17.11 In the case of (b) he shall inform the aircraft as early as possible that clutter is affecting the radar display and that missed approach instructions will be passed in good time if it becomes necessary to abandon the approach.

18 Situation Display Serviceability

Unit operations manual lay down the checks that a radar controller is to make to ensure the radar display is serviceable.

19 *ATS Surveillance System* Failure

19.1 In the event of complete failure of the ATS surveillance system where air-ground communications remain, the controller shall plot the positions of all aircraft already identified, take the necessary action to establish procedural separation between the aircraft and, if necessary, limit the number of aircraft permitted to enter the area.

19.2 As an emergency measure, use of flight levels spaced by half the applicable vertical separation minimum may be resorted to temporarily if standard procedural separation cannot be provided immediately, the controller shall re-identify all aircraft by an approved method using either primary or secondary radar and in accordance with the procedures described in paragraphs 3 and 4 of this chapter.

20 Limitations in the use of Radar

20.1 The number of aircraft simultaneously provided with radar services shall not exceed that which can safely be handled under the prevailing circumstances, taking into account:

a) The degree of technical reliability and the back-up facilities of the radar and the communication system in use;

b) The capabilities and skill of the radar controller;

c) The number of Individual position symbols observed on the radar display within the sector or area of responsibility of the radar controller;

d) When radar separation is applied, the possibility of a radar equipment failure or other emergency that would eventually require establishment of procedural separation.

20.2 A distinction should be made as to the application of a Radar service with regard to vectoring traffic and monitoring traffic. Controllers should take note that providing a Radar control service will require a higher level of concentration and effort than monitoring the traffic flow and as such, the amount of traffic placed under Radar control will depend on the ability of the controller and the capability of the equipment.

21 Combined Radar/ Procedural Control

21.1 The following procedures are laid down for the guidance of controllers who are required to combine the function of procedural control and radar control. They do not affect the radar procedures laid down elsewhere in this chapter.

21.2 The prime use of radar by Air Traffic Control is to expedite the movement of air traffic by using radar separation to achieve better utilisation of existing airspace. When radar is used by the same controller who is providing procedural separation standards as well as radar separation it is imperative that pilots of aircraft are made fully aware of the occasions when they are under radar control and that radar separation and where appropriate terrain clearance is being applied. If pilots are not aware of the fact that they are being radar vectored it can lead to the belief that they are not separated when they see another aircraft in what they consider to be close proximity. It is equally important that the pilot be aware that he is not under radar control, particularly in respect of terrain clearance responsibility.

21.3 Where SIDs and STARs are dependent on radar services, the headings and tracks in such procedures are to be considered as vectors and therefore subject to terrain clearance considerations, with the exception of the phases of flight associated with take-off and landing (including missed approach) where the aircraft is below the radar terrain clearance limits which are accounted for in the procedure design.

21.4 **Monitoring**

21.4.1 Where procedural standard separation is being applied between controlled flights it need only be necessary to monitor such traffic to ensure compliance with ATC clearances.

21.4.2 Radar may also be used in this sense to establish that track separation or geographical separation has been achieved and is being maintained. The use of radar in this manner will reduce the number of R/T communications normally required to establish such separation. Monitoring of final approach spacing between arriving aircraft and arriving and departing aircraft is also another function.

21.5 Procedural Clearance

21.5.1 Whenever possible a procedural clearance, providing standard separation, should be issued to aircraft which will ensure the maintenance of standard separation until such aircraft have been positively identified and radar separation can be applied. When, however, the conflicting traffic is under radar control an unrestricted clearance may be given to an aircraft prior to identification provided that positive identification of such aircraft can be achieved before radar separation is reduced.

22 STRATEGIC LATERAL OFFSETs PROCEDURES (SLOP) IN OCEANIC AND REMOTE CONTINENTAL AIRSPACE

22.1 SLOP are approved procedures that allow aircraft to fly on a parallel track to the right of the centre line relative to the direction of flight. An aircraft's use of these procedures does not affect the application of prescribed separation standards.

Note 1.— Annex 2, 3.6.2.1.1, requires authorization for the application of strategic lateral offsets from the appropriate ATS authority responsible for the airspace concerned.

Note 2.— The following incorporates lateral offset procedures for both the mitigation of the increasing lateral overlap probability due to increased navigation accuracy, and wake turbulence encounters.

Note 3.— The use of highly accurate navigation systems (such as the global navigation satellite system (GNSS)) by an increasing proportion of the aircraft population has had the effect of reducing the magnitude of lateral deviations from the route centre line and, consequently, increasing the probability of a collision, should a loss of vertical separation between aircraft on the same route occur.

22.2 The following shall be taken into account by the appropriate ATS authority when authorizing the use of strategic lateral offsets in a particular airspace:

a) Strategic lateral offsets shall only be authorized in en-route oceanic or remote continental airspace. Where part of the airspace in question is provided with an ATS surveillance service, transiting aircraft should normally be allowed to initiate or continue offset tracking;

b) Strategic lateral offsets do not affect lateral separation minima and may be authorized for the following types of routes (including where routes or route systems intersect):

1) Uni-directional and bi-directional routes; and

2) Parallel route systems where the spacing between route centre lines is not less than 55.5 km, (30 NM);

c) In some instances it may be necessary to impose restrictions on the use of strategic lateral offsets, e.g. where their application may be inappropriate for reasons related to obstacle clearance;

d) Strategic lateral offset procedures should be implemented on a regional basis after coordination between all States involved;

e) The routes or airspace where application of strategic lateral offsets is authorized, and the procedures to be followed by pilots, shall be promulgated in aeronautical information publications (AIPs); and

f) Air traffic controllers shall be made aware of the airspace within which strategic lateral offsets are authorized.

22.3 The decision to apply a strategic lateral offset shall be the responsibility of the flight crew. The flight crew shall only apply strategic lateral offsets in airspace where such offsets have been authorized by the appropriate ATS authority and when the aircraft is equipped with automatic offset tracking capability.

22.4 The strategic lateral offset shall be established at a distance of 1.85 km (1 NM) or 3.7 km (2 NM) to the right of the centre line relative to the direction of flight.

Note 1. — Pilots may contact other aircraft on the inter-pilot air-to-air frequency 123.45 MHz to coordinate offsets.

Note 2. — The strategic lateral offset procedure has been designed to include offsets to mitigate the effects of wake turbulence of preceding aircraft. If wake turbulence needs to be avoided, one of the three available options (centre line, 1.85 km (1 NM) or 3.7 km (2 NM) right offset) may be used. Note 3. — Pilots are not required to inform ATC that a strategic lateral offset is being applied.

Section 8 Communications Procedures and Standard Phraseology

Chapter 1 General Operating Procedures

1 Introduction

1.1 The phraseology and procedures detailed in this section are to be adhered to in order to ensure uniformity, they may, however, be modified or extended by Air Traffic Controllers as occasion demands, but such modifications and extensions should not prejudice their basic meaning or intention.

1.2 Radiotelephony provides the means by which pilots and ground personnel communicate with each other. Used properly the information and instructions transmitted are of vital importance in assisting in the safe and expeditious operation of aircraft. The use of non-standard procedures and phraseology can cause misunderstanding. Incidents and accidents have occurred in which a contributing factor has been the misunderstanding caused by the use of poor phraseology. The importance of using correct and precise standard phraseology cannot be over-emphasized.

1.3 The phraseology in this section is based on the standards and recommended practices contained in ICAO Annex 10, Volume 2, ICAO PANS–ATM, Document 4444 and ICAO Document 9432 to ensure, as far as possible, reliable and unambiguous communication between air and ground stations regardless of the native tongue of the users.

2 Radio Guard

2.1 All licensed ATS personnel where so rostered shall maintain a continuous guard on the appropriate radio frequencies throughout their tour of duty.

2.2 Should it be necessary to suspend the radio guard for any reason, the break in the radio guard shall be kept as short as possible.

2.3 Any aircraft in radio contact with the ATSU shall be informed that there will be a break in the radio guard.

2.4 If practicable another ATSU or sector should be asked to listen out for, and to answer any calls during breaks in the radio guard.

3 Speech Technique

3.1 General

3.1.1 The following transmitting techniques will assist in ensuring that transmitted speech is clearly and satisfactorily received:

a) Before transmitting listen out on the frequency to be used to ensure that there will be no interference with a transmission from another station.

b) Be familiar with good microphone operating techniques.

c) Use a normal conversational tone, speak clearly and distinctly.

d) Maintain an even rate of speech not exceeding 100 words per minute. When it is known that elements of the message will be written down by the recipient, speak at a slightly slower rate. Avoid rapid delivery of instructions especially when dealing with pilots who are not speaking their national language.

e) Maintain the speaking volume at a constant level.

f) A slight pause before and after numbers will assist in making them easier to understand.

h) Depress the transmit switch fully before speaking and do not release it until the message is completed. This will ensure that the entire message is transmitted.

i) Avoid excessive use of courtesies.

j) Avoid introduction of hesitation syllables, such as 'er' or 'ah'.

k) Avoid entering into non-operational conversations with pilots.

3.1.2 Efforts should be made to keep transmissions as brief as possible, and to dispense with all unnecessary words, phrases, etc. which can quickly lead to frequency congestion.

3.2 Radiotelephone

3.2.1 Correct enunciation of words, spoken at a uniform rate in a voice pitched somewhat higher than normal but preserving the rhythm of ordinary conversation will do much to assist satisfactory reception of mechanically reproduced speech. Microphones are directionally functioning and controllers should therefore speak directly into them.

3.2.2 To avoid clipped transmissions, particularly where the transmitter is remote from the microphone, it is important to depress the transmit switch fully before speech is commenced and to avoid returning it before the transmission is completed. Controllers should endeavour to use clear concise sentences and to eradicate such obvious faults as hesitation sounds, verbosity, lowering of voice, blurring of consonants, etc. This will ensure maximum efficiency and prevent irritating repetitions.

2.2.3 It should be noted that standard phraseology with clear enunciation and an urgent tone must be used for collision avoidance instructions.

3.3 Land Line and ATS/DS Telephone

3.3.1 It is correct procedure for controllers and assistants to announce identity on all telephone calls; with incoming calls it is the opening remark and with outgoing calls the reply to the recipient‘s announcement of identity.

3.3.2 It is just as important that this procedure is not relaxed for direct telephone lines as mistaken identity can occur when another line has been inadvertently left open from a previous call.

3.3.3 Announcing identity on outgoing calls when using direct telephone lines is not required at those units where equipment and labelling ensure that mistaken identity cannot occur.

3.3.4 The identity to be used is that of the function relative to the telephone extensions being used. On outside calls the identity should be given in full, for example ‗This is Johannesburg Air Traffic Control‘ but on direct lines, where it will require no further amplification, it may be abbreviated to Johannesburg‘.

3.4 **Phonetic Alphabet**

3.4.1 To expedite communications, the use of phonetic spelling should be dispensed with if there is no risk of this affecting correct reception and intelligibility of the message.

3.4.2 With the exception of the telephony designator and the type of aircraft, each letter in the aircraft callsign shall be spoken separately using the phonetic spelling.

3.4.3 The words in the following table are to be used when individual letters are transmitted except for particular letter groups which have become unmistakable, e.g. ILS, QFE, ETA etc. The syllables to be emphasised are underlined.

A	ALPHA	(AL FAH)	N	NOVEMBER	(NO VEM BER)
B	BRAVO	(BRAH VOH)	O	OSCAR	(OSS CAH)
C	CHARLIE	(CHAR LEE)	P	PAPA	(PAH PAH)
D	DELTA	(DELL TAH)	Q	QUEBEC	(KEH BECK)
E	ECHO	(ECK OH)	R	ROMEO	(ROW ME OH)
F	FOXTROT	(FOKS TROT)	S	SIERRA	(SEE AIRRAH)
G	GOLF	(GOLF)	T	TANGO	(TANG GO)
H	HOTEL	(HOH TELL)	U	UNIFORM	(YOU NEE FORM)
I	INDIA	(IN DEE AH)	V	VICTOR	(VIKTAH)
J	JULIET	(JEW LEE ET)	W	WHISKY	(WISS KEY)
K	KILO	(KEY LOH)	X	XRAY	(ECKS RAY)
L	LIMA	(LEE MAH)	Y	YANKEE	(YANG KEY)
M	MIKE	(MIKE)	Z	ZULU	(ZOO LOO)

3.5 **Numerals**

3.5.1 The syllables to be emphasised are underlined.

0	ZE-RO	5	FIFE	Hundred	HUN DRED
1	WUN	6	SIX	Thousand	TOU SAND

2	TOO	7	SEVEN	Decimal	DAY SEE MAL
3	TREE	8	AIT		
4	FOWER	9	NINER		

3.5.2 When transmitting messages containing aircraft callsigns, flight levels, headings, wind direction and speed, pressure settings, frequencies, transponder codes, and aircraft speeds, each digit shall be transmitted separately. examples of this convention are as follows:

SAA280	Springbok TOO AIT ZE-RO
18 knots	WUN AIT knots
FL180	Flight Level WUN AIT ZE-RO
330 degrees	TREE TREE ZE-RO degrees
126.7	WUN TOO SIX DAY SEE MAL SEVEN
FL200	Flight Level ***TOO HUN DRED***
QNH1000	***QNH WUN TOU SAND***

3.6 **Time**

3.6.1 UTC and the 24-hour clock is to be used at all times.

3.6.2 When speaking a time value, normally only the minutes of the hour are required; each figure being pronounced separately. However, if there is any possibility of confusion the full four-figure group is to be spoken.

3.7 **Standard Speech Abbreviations**

The words and phrases shown in the table below are to be used whenever applicable.

ACKNOWLEDGE	Let me know that you have received and understood this message.
AFFIRM	Yes
APPROVED	Permission for proposed action granted.
BREAK	Indicates separation between messages.
BREAK BREAK	I hereby indicate the separation between messages transmitted to different aircraft in a very busy environment.

CANCEL	Annul the previously transmitted clearance.
CHECK	Examine a system or procedure. (Not to be used in any other context. No answer is normally expected).
CLEARED	Authorised to proceed under the conditions specified.
CONFIRM	I request verification of: (clearance, instruction, action, information)
CONTACT	Establish communications with ...
CORRECT	"True" or "Accurate"
CORRECTION	An error has been made in this transmission (or message indicated). The correct version is ...
DISREGARD	Ignore
GO AHEAD	Proceed with your message. Note. — The phrase —GO AHEADll is not normally used in surface movement communications.
HOW DO YOU READ	What is the readability of my transmission?
I SAY AGAIN	I repeat for clarity or emphasis.
MAINTAIN	Continue in accordance with the condition(s) specified or in its literal sense, e.g. Maintain VFR.
MONITOR	Listen out on (frequency).
NEGATIVE	No or Permission not granted or That is not correct or Not capable.
OVER	My transmission is ended, and I expect a response from you. (Not normally used in VHF communications).
OUT	This exchange of transmissions is ended and no response is expected. (Not normally used in VHF communications).
READ BACK	Repeat all, or the specified part, of this message back to me exactly as received.
RECLEARED	A change has been made to your last clearance and this new clearance supersedes your previous clearance or part thereof.
REPORT	Pass me the following information ...
REQUEST	I should like to know ... or I wish to obtain ...

ROGER	I have received all of your last transmission. Note: Under no circumstances to be used in reply to a question requiring READ BACK or a direct answer in the affirmative (AFFIRM) or negative (NEGATIVE).
SAY AGAIN	Repeat all, or the following part, of your last transmission.
SPEAK SLOWER	Reduce your rate of speech.
STAND BY	Wait and I will call you. Note - The caller would normally re-establish contact if the delay is lengthy. STANDBY is not an approval or denial.
VERIFY	Check and confirm with originator.
WILCO	I understand your message and will comply with it. (Abbreviation for _will comply').
WORDS TWICE	a) As a request: Communication is difficult. Please send every word, or word group, twice. b) As information: Since communication is difficult every word or group of words, in this message will be sent twice.

4 Radiotelephony Callsigns

4.1 Air Traffic Control Units

The RTF callsign of a ground station is normally the place name of that station to which a suffix is added to indicate the particular air traffic control service provided:

Air Traffic Control Service	Suffix
Aerodrome Control	Tower
Ground Movement Control	Ground
Clearance Delivery	Delivery
Approach Control	Approach
Radar (in general)	Radar
Approach Control Radar - Arrivals	Arrival

Approach Control Radar - Departures	Departure
Precision Approach Radar	Precision
Area Control	Control
Flight Information	Information
Aeronautical Station	Radio
Apron Control	Apron

4.2 **Aircraft Callsigns**

4.2.1 Aircraft are identified by one of the following types of callsigns:

a) The five letter callsign of a South African registered aircraft, i.e. ZSABC;

b) A foreign registered aircraft which may include a combination of characters, i.e. N38381, N21PS, VPABC;

c) The registration of the aircraft preceded by the approved telephony designator of the operating company, i.e. Speedbird GBACD;

d) The approved telephony designator of the airline followed by the flight number, i.e. SAA530.

e) SANDF aircraft are issued with mission numbers or personalized callsigns. For security reasons they are changed often. These mission numbers will be supplied by the SANDF operations room.

f) Formation flights; the name of the formation followed by the word —leaderll, i.e. SPADES LEADER.

g) The aircraft type followed by the aircraft registration, i.e. APACHE ZSCMW.

4.2.2 Once satisfactory two-way communication with an aircraft has been established controllers are permitted to abbreviate the callsign but only to the extent shown in the table below.

Full callsign	GBCDR	Speedbird GBCDR	N31029	N753DA	Apache ZSCMW	NTW310

Abbreviation	GDR	Speedbird DR	N029	N3DA	Apache MW	No abbreviation

4.2.3 Aircraft in the heavy vortex wake category may include the word 'HEAVY' immediately following their callsign, on initial contact with an ATC Unit. The purpose of this call is to confirm the aircraft type and/or vortex category is the same as that stated on the flight progress strip.

4.3 Callsign Confusion

4.3.1 Controllers should be aware that the similarity of some aircraft callsigns can cause confusion which could lead to incidents. In many cases strict R/T discipline can alleviate the problem. Callsigns which contain three or more common digits are particularly liable to be confused.

4.3.2 When there is a likelihood that callsigns will be confused, the pilots of the aircraft concerned should be warned, especially when the flight number are identical, e.g. SAA515 and SFR515.

4.3.3 Callsign abbreviation must not be used when two aircraft on the same frequency have similar registrations e.g. ZS-SSB and VP-SSB. In this situation both aircraft are to be instructed to use the full callsign.

4.3.4 The omission of the company designator when it is an integral part of a callsign can lead to confusion with other numerical and literal information, e.g. levels, headings, reporting point designations, etc. It may also negate the _alerting‘ effect on the pilot of hearing his own company designator. Therefore, company designators must always be used when they are part of a callsign.

5 Communication with Aircraft

5.1 Establishment of Contact

5.1.1 For aircraft being provided with an aerodrome control service, the initial call shall contain:-

a) Designation of the station being called;

b) The full callsign/ registration of the aircraft/ helicopter;

Note: Aircraft in the ―Heavy‖ wake turbulence category shall include the word heavy after the callsign/ registration.

c) Position; and

d) Additional elements as required by the appropriate ATS authority.

5.1.2 The phrase ‗continue as cleared' should not be used when replying to an initial call made by an aircraft which has been transferred from another frequency.

5.2 **Continuation of Communications**

5.2.1 Once satisfactory two-way contact with an aircraft has been established, controllers are permitted to shorten the procedures provided that no mistaken identity or confusion is likely to arise:

a) It can be assumed that the aircraft is listening out and controllers may transmit messages without waiting for a reply from the aircraft.

b) Phrases such as ‗over',‗roger' ‗out', may be omitted.

5.3 **Text**

5.3.1 Controllers are to compose the text of messages according to the requirements laid down for a particular procedure.

5.3.2 Messages should not contain more than three specific phrases comprising a clearance, instruction or pertinent information. In cases of doubt, e.g. a foreign pilot having difficulty with the English language or an inexperienced pilot unsure of the procedures, the number of items should be reduced and if necessary passed, and acknowledged, singly.

5.4 **Standard Phrases**

5.4.1 A list of standard phrases, under appropriate headings, appears in this section. The message is to be composed from one or more phrases but the whole phrase must be used.

5.4.2 The lists are not exhaustive and controllers may have to devise additional phrases for unusual situations. However, where a phrase does exist for a particular purpose it must be used.

5.5 Acknowledgement of Messages

5.5.1 Pilots are expected to acknowledge all messages. In some cases the sole use of the aircraft's callsign is sufficient. However, an acknowledgement only is not acceptable when a complete or abbreviated read back is required.

5.6 Pilot Read Back of Messages

5.6.1 Pilots are required to read back in full messages containing any of the following items:

a) Taxi instructions

b) Level instructions

c) Heading instructions

d) Speed instructions

e) Airways or route clearances

f) Approach clearances

g) Runway-in-use

h) Clearance to enter, land on, take-off, backtrack, cross or hold short of any active runway

i) SSR operating instructions

j) Altimeter settings

k) VDF information

l) Frequency changes

m) Type of radar service

n) Transition levels

5.6.2 Controllers are to prompt a pilot if a read back is not immediately forthcoming.

5.6.3 Errors in a read back must be corrected by the controller until the pilot gives an accurate read back.

5.6.4 Items which do not appear in the list above may be acknowledged with an abbreviated read back, e.g.

Clearance:	*'After the B747 passing left to right, taxi to the holding point runway 21R'.*
Abbreviated readback:	*'After the B747, holding point 21R.'*

5.7 **Climb and Descent Clearances**

5.7.1 Clearances to climb and descend are to include the expression 'flight level', 'altitude' or 'height'. The word 'to' after the verb must be used when clearing an aircraft to either an altitude, height or flight level. The following are examples of correct phraseology:

a) 'Climb to flight level 350';

b) 'Descend to flight level 240';

c) 'Climb to altitude 2500 feet';

d) 'Descend to height 1500 feet'.

5.7.2 The expression 're-cleared' shall not to be used.

5.8 **Conditional Clearances**

5.8.1 Conditional phrases such as *"behind the landing aircraft"* or *"after the departing aircraft"* shall not be used for movements affecting the active runway (s), except when the aircraft or vehicles concerned are seen by the appropriate controller or pilot.

5.8.2 The aircraft or vehicle causing the condition in the clearance issued shall be the first aircraft/ vehicle to pass in front of the aircraft concerned.

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

a) Identification;

b) The condition;

c) The clearance; and

e) Brief reiteration of the condition,

For example:

"SAS941, behind DC9 on short final, line up behind".

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

5.9 **Vehicle Driver Read Back of RTF Messages**

5.9.1 Vehicle drivers are required to read back in full all messages containing instructions or clearances that relate to movement on the manoeuvring area.

5.9.2 The controller shall listen to the read-back to ascertain that the instruction has been correctly acknowledged by the vehicle driver and shall take immediate action to correct any discrepancies revealed by the read-back.

5.10 **Transfer of Communications**

5.10.1 To transfer communication with an aircraft to another unit, controllers shall pass instructions giving:-

a) The identity of the unit to be contacted;

b) The frequency to be used for contact.

5.10.2 When the frequency of an aeronautical mobile service station is an intermediate 25 kHz the full figure will comprise 6 digits. However, controllers transferring aircraft to these frequencies are to use only the first 4 digits, e.g.:-

Frequency	**Spoken**
124,725	124,7
119,775	119,7

5.10.3 If no further communication is received after acknowledgement, satisfactory transfer of communication may be assumed.

5.11 **Transmission of Company Messages by Controllers**

5.11.1 When requested by a company representative, controllers may transmit specific operational messages to aircraft subject to normal air traffic service requirements and shall prefix the transmission 'Company advise/request ...'

5.11.2 Where messages of a technical and complicated nature are involved it may be found advisable to permit direct speech between the originator of the message and the pilot. In such cases the company's representative may be permitted to use the RTF himself provided that his identity is announced before the message is passed and that the controller continues to monitor the frequency.

5.11.3 A message affecting the safety of an aircraft in flight (e.g. bomb warning, suspected damage to the aircraft, etc.) is to be passed to the commander immediately using the company representative's precise wording. An abbreviation or precis could be misunderstood and lead to a wasteful operation or even a dangerous situation.

5.12 **Test Transmissions**

5.12.1 All radio transmissions for test purposes shall be of the minimum duration necessary for the test and shall not continue for more than 10 seconds. The recurrence of such transmissions shall be kept to the minimum necessary for the test.

5.12.2 The nature of the test shall be such that it is identifiable as a test transmission and cannot be confused with other communications. To achieve this, the following format shall be used:

a) The callsign of the ATSU being called;

b) Aircraft identification;

c) The words 'RADIO CHECK';

d) The frequency being used.

5.12.3 The operator of the ATSU being called will assess the transmission and will advise the aircraft making the test transmission in terms of the readability scale, together with a comment on the nature of any abnormality noted (i.e. excessive noise) using the following format:

a) Aircraft identification;

b) The callsign of the ATSU replying;

c) READABILITY taken from the table below;

d) Additional information with respect to any noted abnormality.

Quality	**Scale**
Unreadable	1
Readable now and then	2
Readable with difficulty	3
Readable	4
Perfectly readable	5

5.12.4 For practical reasons it may be necessary for the controller at an ATSU to reply with 'STATION CALLING UNREADABLE'

5.13 **Broadcast Transmissions**

When an ATSU wishes to broadcast information to all aircraft likely to receive it, the message should be prefaced by the call ‗All stations'. No reply is expected to such general calls unless individual stations are subsequently called upon to acknowledge receipt.

5.14 Inter-sector Coordination

Procedures for coordination and transfer of control between control sectors within the same ATC unit shall conform to the procedures applicable between ATC units. Direct-speech and/or data link communications shall be used in ground-ground communications for air traffic services purposes.

Where an Intercom Direct Speech link has been provided at an ATSU, all required inter-sector voice coordination, including the voice coordination between sectors within the same ATSU, shall be done via the intercom.

Chapter 2 Standard Phraseology

1. ATC Phraseology

1.1 Words in brackets indicate that specific information such as a flight level, a place or a time, etc, must be inserted to complete the phrase, or alternatively that optional phrases may be used. Words in square brackets indicate optional additional words or information that may be necessary in specific instances.

1.2 The following symbols should be noted in the following sub-paragraphs to differentiate between pilot and ATC specific responses:

* denotes pilot transmission

§ denotes ATC response.

1.3 General Phraseology

Circumstances	*Phraseologies*
Description of levels (subsequently referred to as "(level ")	a) FLIGHT LEVEL (*number*); or (*number*) FEET
Level changes, reports and rates	b) CLIMB (*or* DESCEND); Followed as necessary by: i) To (*level*);
... clearance to climb on a SID which has published level and/or speed restrictions, where the pilot is to climb to the cleared level and comply with published level restrictions, follow the lateral profile of the SID; and comply with published speed restrictions or ATC issued speed control instructions as applicable.	z) CLIMB VIA SID TO (level)
... clearance to cancel level restriction(s) of the vertical profile of a SID during climb	aa) [CLIMB VIA SID TO (level)], CANCEL LEVEL RESTRICTION(S)
... clearance to cancel specific level restriction(s) of the vertical profile of a SID during climb	bb) [CLIMB VIA SID TO (level)], CANCEL LEVEL RESTRICTION(S) AT (point(s))
... clearance to cancel speed restrictions of a SID during climb	cc) [CLIMB VIA SID TO (level)], CANCEL SPEED RESTRICTION(S)
... clearance to cancel specific speed restrictions of a SID during climb	dd) [CLIMB VIA SID TO (level)], CANCEL SPEED RESTRICTION(S) AT (point(s))

…clearance to climb and to cancel speed and level restrictions of a SID	ee) CLIMB UNRESTRICTED TO (level) (or) CLIMB TO (level), CANCEL LEVEL AND SPEED RESTRICTIONS
... clearance to descend on a STAR which has published level and/or speed restrictions, where the pilot is to descend to the cleared level and comply with published level restrictions, follow the lateral profile of the STAR and comply with published speed restrictions or ATC issued speed control instructions.	ff) DESCEND VIA STAR TO (level)
... clearance to cancel level restrictions of a STAR during descent	gg) [DESCEND VIA STAR TO (level)], CANCEL LEVEL RESTRICTION(S)
... clearance to cancel specific level restrictions of a STAR during descent	hh) [DESCEND VIA STAR TO (level)], CANCEL LEVEL RESTRICTION(S) AT (point(s))
... clearance to cancel speed restrictions of a STAR during descent	ii) [DESCEND VIA STAR TO (level)], CANCEL SPEED RESTRICTION(S)
... clearance to cancel specific speed restrictions of a STAR during descent	jj) [DESCEND VIA STAR TO (level)], CANCEL
SPEED RESTRICTION(S) AT (point(s)) ... clearance to descend and to cancel speed and level restrictions of a STAR	kk) DESCEND UNRESTRICTED TO (level) or DESCEND TO (level), CANCEL LEVEL AND SPEED RESTRICTIONS
… clearance to cancel level restriction(s) of the vertical profile of a STAR during descent	cc) DESCEND TO (level) [LEVEL RESTRICTION(S) (STAR designator) CANCELLED (or) LEVEL RESTRICTION(S) (STAR designator) AT (point) CANCELLED]
….instruction that a climb (or descent) to a level within the vertical range	ii) TO AND MAINTAIN BLOCK (*level*) TO (*level*)

defined is to commence.	iii) TO REACH (*level*) AT (*or* BY) (*time or significant point*);
	iv) REPORT LEAVING (*or* REACHING, *or* PASSING) (*level*);
	v) AT (*number*) FEET PER MINUTE [OR GREATER (*or* OR LESS];
For SST aircraft only	vi) REPORT STARTING ACCELERATION (*or* DECELERATION).
	c) MAINTAIN AT LEAST (*number*) (FEET) ABOVE (*or* BELOW) (*aircraft call sign*).
	d) REQUEST LEVEL (*or* FLIGHT LEVEL *or* ALTITUDE) CHANGE FROM (*name of unit*) [AT (*time or significant point*)];
	e) STOP CLIMB (*or* DESCENT) AT (*level*);
	f) CONTINUE CLIMB (*or* DESCENT) TO (*level*);
	g) EXPEDIATE CLIMB (*or* DESCENT) [UNTIL PASSING (*level*)];
	h) WHEN READY CLIMB (*or* DESCEND) TO (*level*);
	i) EXPECT CLIMB (*or* DESCENT) AT (*time or significant point*);
	j) *REQUEST DESCENT AT (*time*);
...to require action at a specific time or place.	k) IMMEDIATELY;
	l) AFTER PASSING (*significant point*);
	m) AT (*time or significant point*);

…..to require action when convenient	n) WHEN READY (*instruction*);
…to require an aircraft to climb or descend maintaining own separation and VMC	o) MAINTAIN OWN SEPARATION AND VMC [FROM (*level*)] [TO (*level*)];
	p) MAINTAIN OWN SEPARATION AND VMC ABOVE (*or* BELOW, *or* TO (*level*);
…when there is doubt that an aircraft can comply with a clearance or instruction	q) IF UNABLE (*alternative instructions*) AND ADVISE;
….when a pilot is unable to comply with a clearance or instruction.	r) *UNABLE;
…after a flight crew starts to deviate from any ATC clearance or instruction to comply with an ACAS resolution advisory (RA) (Pilot & controller interchange)	s) *TCAS RA t) § ROGER;

… after the response to an ACAS RA is completed and a return to the ATC clearance or instruction is initiated (Pilot & controller interchange)	u) *CLEAR OF CONFLICT,RETURNING TO (assigned clearance); v) § ROGER (or alternative instructions);
…after the response to an ACAS RA is completed and the assigned ATC clearance or instruction has been resumed(Pilot & controller interchange)	w) *CLEAR OF CONFLICT (assigned clearance) RESUMED;
	x) § ROGER (or alternative instructions);
…after an ATC clearance or instruction contradictory to the ACAS RA is received, the flight crew will follow the RA and inform ATC directly (Pilot & controller interchange)	y) *UNABLE, TCAS RA; z) § ROGER

1.4 **Transfer of Control and/ or Frequency Change**

Circumstances	*Phraseologies*
	a) CONTACT (*unit call sign*) (*frequency*) [NOW];
	b) AT (*or* OVER) (*time or place*) [*or* WHEN] [PASSING/LEAVING/REACHING](*level*)] CONTACT (*unit call sign*) (*frequency*);
	c) IF NO CONTACT *(instructions*);
Note - An aircraft may be requested to "*STAND BY*" on a frequency when it is intended that the ATS unit will initiate communications soon and to "*MONITOR*" a frequency when information is being broadcast thereon.	d) STAND BY FOR (*unit call sign/ frequency*);
	e) *REQUEST CHANGE TO (*frequency*);
	f) FREQUENCY CHANGE APPROVED;
	g) MONITOR (*unit call sign*) (*frequency*);
	h) *MONITORING (*frequency*);
	i) WHEN READY CONTACT (*unit call sign*) (*frequency*);
	j) REMAIN THIS FREQUENCY.

1.5 **Change of Callsign**

Circumstances	*Phraseologies*
… to instruct an aircraft to change its type of call sign	a) CHANGE YOUR CALL SIGN TO (*new call sign*) [UNTIL FURTHER ADVISED]

…to advise an aircraft to revert to the call sign indicated in the flight plan.	b) REVERT TO FLIGHT PLAN CALL SIGN (*call sign*) [AT (*significant point*)]

1.6 Traffic Information

Circumstances	*Phraseologies*
	a) TRAFFIC (*information*);
…to pass traffic information	b) NO REPORTED TRAFFIC;
… to acknowledge traffic information	c) *LOOKING OUT;
	d) *TRAFFIC IN SIGHT;
	e) *NEGATIVE CONTACT [*reasons*];
	f) [ADDITIONAL] TRAFFIC (*direction*) BOUND (*type of aircraft*) (*level*) ESTIMATED (*or* OVER) (*significant point*) AT (*time*);
	g) TRAFFIC IS *(classification)* UNAMNNED FREE BALLOON (S) WAS [*or* ESTIMATED] OVER *(place)* AT *(time)* REPORTED *(level(s))* [or LEVEL UNKNOWN] MOVING *(direction)* *(other pertinent information, if any).*

1.7 Meteorological Conditions

Circumstances	*Phraseologies*
	a) [SURFACE] WIND *(number)* DEGREES *(speed)* *(units)*;
	b) WIND AT *(level)* *(number)* DEGREES *(number)* (KNOTS)

	Note - Wind is always expressed by giving the mean direction and speed and any significant variations thereof.
	c) VISIBILITY *(distance) (units)* [*direction*]
	d) RUNWAY VISUAL RANGE (*or* RVR) [RUNWAY *(number)*] *(distance) (units)*;
	e) RUNWAY VISUAL RANGE (*or* RVR) RUNWAY *(number)* NOT AVAILABLE (*or* NOT REPORTED;
… for multiple RVR observations	f) RUNWAY VISUAL RANGE (*or* RVR) [RUNWAY *(number)*] *(first position) (distance) (units), (second position) (distance) (units), (third position) (distance) (units)*;
	Note 1 - Multiple RVR observations are always representative of the touchdown zone, midpoint zone and the roll-out/stop zone respectively.
	Note 2 - Where reports for three locations are given the indication of these locations may be omitted, provided that the reports are passed in the order of touchdown zone, followed by the midpoint zone and ending with the roll-out/stop end zone report.
…in the event that RVR information on any one position is not available this information will be included in the appropriate sequence	g) RUNWAY VISUAL RANGE (*or* RVR) [RUNWAY *(number)] (first position) (distance) (units), (second position)* NOT AVAILABLE, *(third position) (distance) (units)*;
	h) PRESENT WEATHER *(details)*;
	i) CLOUD (*amount*, [(*type*)] *and height of base) (units)* (*or* SKY CLEAR);

	j) CAVOK; *Note - CAVOK pronounced CAV-O-KAY.*
	k) TEMPERATURE [MINUS] *(number)* *(and/or* DEW-POINT [MINUS] *(number)*);
	l) QNH *(number)* [*(units)*];

	m) QFE (*number*) [*(units)*];
	n) *(aircraft type)* REPORTED *(description)* ICING (*or* TURBULENCE) [IN CLOUD] *(area) (time)*;
	o) REPORT FLIGHT CONDITIONS

1.8 **Position Reporting**

Circumstances	*Phraseologies*
…to omit position reports until a specified position	***a)*** NEXT REPORT AT *(significant point);*
	b) OMIT POSITION REPORTS [UNTIL *(specify)*];
	c) RESUME POSITION REPORTING.

1.9 **Additional Reports**

Circumstances	*Phraseologies*
	a) REPORT PASSING *(significant point)*;
…to request a report at a specified place or distance.	b) REPORT (distance) MILES (GNSS or DME)FROM (name of DME station) (or significant point);
	c) (distance) MILES (GNSS or DME) FROM (name of DME station) (or significant point)
	d) REPORT PASSING (three digits)

	RADIAL (name of VOR) VOR;
…to request a report of present position	e) REPORT (GNSS or DME) DISTANCE FROM (significant point) or (name of DME station);
… to report present position	f) (distance) MILES (GNSS or DME) FROM (name of DME station)or(significant point)

1.10 **Aerodrome Information**

Circumstances	*Phraseologies*
Note 1.— See 11.4.3.4.3 for requirements for passing RCR to pilots. Note 2.— This information is provided for runway thirds or the full runway, as applicable	a) (location)RUNWAY (number) SURFACE CONDITION CODE (three digit number) following as necessary by: 1. ISSUED AT (date and time UTC); 2. DRY, or WET ICE, or WATER ON TOP OF COMPACTED SNOW, or DRY SNOW, or DRY SNOW ON TOP OF ICE, or WET SNOW ON TOP OF ICE, or ICE, or SLUSH, or STANDING WATER, or COMPACTED

	SNOW, or WET SNOW, or DRY SNOW ON TOP OF COMPACTED SNOW, or WET SNOW ON TOP OF COMPACTED SNOW, or WET, or FROST; 3. DEPTH ((depth of deposit) MILLIMETRES or NOT REPORTED); 4. COVERAGE ((number) PERCENT or NOT REPORTED); 5. ESTIMATED SURFACE FRICTION (GOOD, or GOOD TO MEDIUM, or MEDIUM, or MEDIUM TO POOR, or POOR, or WORSE THAN POOR); 6. AVAILABLE WIDTH (number) METRES; 7. LENGTH REDUCED TO (number) METRES; 8. DRIFTING SNOW; 9. LOOSE SAND; 10. CHEMICALLY TREATED; 11. SNOWBANK (number) METRES [LEFT, or RIGHT or LEFT AND RIGHT] [OF or FROM] CENTRELINE; 12. TAXIWAY (identification of taxiway) SNOWBANK (number) METRES [LEFT, or RIGHT or LEFT AND RIGHT] [OF or FROM] CENTRELINE; 13. ADJACENT SNOWBANKS; 14. TAXIWAY (identification of taxiway) POOR; 15. APRON (identification of apron) POOR; 16. Plain language remarks b) . . .

	e) CAUTION (specify reasons) RIGHT (or LEFT), (or BOTH SIDES) OF RUNWAY [(number)]; . . . g) BRAKING ACTION REPORTED BY (aircraft type) AT (time) GOOD (or GOOD TO MEDIUM, or MEDIUM, or MEDIUM to TO POOR, or POOR); h) TAXIWAY identification of taxiway) WET [or STANDING WATER, or SNOW REMOVED (length and width as applicable), or TREATED, or COVERED WITH PATCHES OF DRY SNOW (or WET SNOW, or COMPACTED SNOW, or SLUSH, or FROZEN SLUSH, or ICE, or WET ICE, or ICE UNDERNEATH, or ICE AND SNOW, or SNOWDRIFTS, or FROZEN RUTS AND RIDGES)];

	i) TOWER OBSERVES (weather information); j) PILOT REPORTS (weather information).

1.11 **Operational Status of Visual and Non-Visual Aids**

Circumstances	*Phraseologies*

	a) *(specific visual or non-visual aid)* RUNWAY *(number) (description of deficiency)*;
	b) *(type)* LIGHTING *(unservicability);*
	c) ILS CATEGORY *(category)* *(serviceability state)*;
	d) TAXIWAY LIGHTING *(description of deficiency)*;
	e) *(type of visual approach slope indicator)* RUNWAY *(number) (description of deficiency)*;

2 Area Control Service

2.1 **Issuance of a Clearance**

Circumstances	*Phraseologies*
	a) *(name of unit)* CLEARS *(aircraft call sign)*;
	b) *(aircraft call sign)* CLEARED TO;
	c) RECLEARED *(amended clearance details)* [REST OF CLEARANCE UNCHANGED];
	d) RECLEARED *(amended route portion)* TO *(significant point of original route)* [REST OF CLEARANCE UNCHANGED]

	e) ENTER CONTROLLED AIRSPACE (*or* CONTROL ZONE) [VIA (*significant point or route)*] AT *(level)* [AT *(time)*];
	f) LEAVE CONTROLLED AIRSPACE (*or* CONTROL ZONE) [VIA *(significant point or route)*] AT *(level)* (*or* CLIMBING, *or* DESCENDING);

	g) JOIN *(specify)* AT *(significant point)* AT *(level)* [AT *(time)*)]

2.2 **Indication of Route and Clearance Limit**

Circumstances	*Phraseologies*
	a) FROM *(location)* TO *(location);*
	b) TO *(location),* Followed as necessary by : i) Direct; ii) VIA (*route and/or significant points);* iii) FLIGHT PLANNED ROUTE; iv) VIA *(distance)* DME ARC *(direction)* OF *(name of DME station)*;
	c) *(Route)* NOT AVAILABLE DUE *(reason)* ALTERNATIVE[S] IS/ARE *(routes)* ADVISE.

2.3 **Maintenance Of Specified Levels**

Circumstances	*Phraseologies*

	a) MAINTAIN *(level)* [TO *(significant point)*];
	b) MAINTAIN *(level)* UNTIL PASSING *(significant point)*;
	c) MAINTAIN *(level)* UNTIL PASSING *(significant point)*;
	d) MAINTAIN *(level)* UNTIL *(time)*;
	e) MAINTAIN *(level)* UNTIL ADVISED BY *(name of unit)*;
	f) MAINTAIN *(level)* UNTIL FURTHER ADVISED;

	g) MAINTAIN *(level)* WHILE IN CONTROLLED AIRSPACE;
	h) MAINTAIN BLOCK *(level)* TO *(level)*.
	Note - the term "MAINTAIN" is not to be used in lieu of "DESCEND" or "CLIMB" when instructing an aircraft to change level.

2.4 **Specification Of Cruising Level**

Circumstances	*Phraseologies*
	a) CROSS *(significant point)* AT (*or* ABOVE, *or* BELOW) *(level)*;
	b) CROSS *(significant point)* AT *(time)* OR LATER (*or* BEFORE) AT *(level)*;
	c) CRUISE CLIMB BETWEEN *(levels)* (*or* ABOVE *(level)*);
	d) CROSS *(distance)* MILES, (GNSS or DME) [*(direction)*] OF *(name of DME station)* AT (*or* ABOVE *or* BELOW) *(level)*.

2.5 **Emergency Descent**

Circumstances	*Phraseologies*
	a) *EMERGENCY DESCENT *(intentions);*
	b) ATTENTION ALL AIRCRAFT IN THE VICINITY OF [*or* AT] *(significant point or location)* EMERGENCY DESCENT IN PROGRESS FROM *(level) (followed as necessary by specific instructions, clearances, traffic information, etc)*

2.6 **If Clearance Cannot Be Issued Immediately Upon Request**

Circumstances	*Phraseologies*
	EXPECT CLEARANCE *(or type of clearance)* AT *(time)*.

2.7 **Separation Instructions**

Circumstances	Phraseologies
	a) CROSS *(significant point)* AT *(time)* [OR LATER (*or* OR BEFORE)];
	b) ADVISE IF ABLE TO CROSS *(significant point)* AT *(time or level);*
	c) MAINTAIN MACH *(number)* [OR GREATER (*or* OR LESS) [UNTIL *(significant point)*];
	d) DO NOT EXCEED MACH *(number);*

2.8 **Instructions Associated With Flying A Track (Offset), Parallel To The Cleared Route.**

Circumstances	Phraseologies
	a) ADVISE IF ABLE TO PROCEED PARALLEL OFFSET;
	b) PROCEED OFFSET *(distance)* RIGHT/LEFT OF *(route)* *(track)* [CENTRE LINE] [AT *(significant point or time)*] [UNTIL *(significant point or time)*];
	c) CANCEL OFFSET *(instructions to rejoin cleared flight route or other information).*

3 **Approach Control Service**

3.1 **Departure Instructions**

Circumstances	*Phraseologies*
	a) [AFTER DEPARTURE] TURN RIGHT (*or* LEFT HEADING *(three digits)* (*or* CONTINUE RUNWAY HEADING) (*or* TRACK EXTENDED CENTRE LINE) TO *(level or significant point)* [*(other instructions as required)*];
	b) AFTER REACHING (*or* PASSING) (*level or significant point) (instructions)*;
	c) TURN RIGHT (*or* LEFT) HEADING *(three digits)* TO *(level)* [TO INTERCEPT *(track, route, airway, etc)*];
	d) *(standard departure name and number)* DEPARTURE;
	e) TRACK *(three digits)* DEGREES [MAGNETIC (*or* TRUE)] TO (*or* FROM) *(significant point)* UNTIL (*time, or* REACHING *(fix or significant point or level)*) [BEFORE PROCEEDING ON COURSE];

	f) CLEARED VIA *(designation)*.
…clearance to proceed direct with advance notice of a future instruction to rejoin the SID	CLEARED DIRECT (waypoint) EXPECT TO REJOIN SID [(sid designator)] [AT (waypoint)] Then REJOIN SID [(sid designator)] [AT (waypoint)] h) CLEARED DIRECT (waypoint)
	then
	g) REJOIN SID (sid designator) AT (waypoint

Note - Conditions associated with the use of these phrases are in Part III, 12.2. (Doc 4444).

3.2 **Approach Instructions**

Circumstances	*Phraseologies*
...clearance to proceed direct with advance notice of a future instruction to rejoin the STAR **Note.— The instrument approach procedure identification in the aeronautical chart is used to specify the type of approach. Where the identification uses a parenthetical suffix to include exceptional conditions, e.g. "(LNAV/VNAV only)" or "(AR)" etc., the text in the parentheses does not form part of the ATC clearance.**	a) **CLEARED (or PROCEED (designation) ARRIVAL;** b) **CLEARED TO (clearance limit) VIA (designation)** c) **CLEARED (or PROCEED) VIA (details of the route to be followed)** d) **CLEARED DIRECT (waypoint), DESCEND TO (level)** **EXPECT REJOIN STAR [(star designator)] AT (waypoint)** **then** **REJOIN STAR [(star designator)] [AT (waypoint)]** e) **CLEARED DIRECT (waypoint), DESCEND TO (level), then** **REJOIN STAR (star designator) AT (waypoint) CLEARED (type of approach) APPROACH [RUNWAY (number)];**) **CLEARED *(type of approach)* RUNWAY *(number)* FOLLOWED BY CIRCLING TO** h) **CLEARED APPROACH [RUNWAY** i) **COMMENCE APPROACH AT *(time)*;**
	j) *REQUEST STRAIGHT-IN [*(type of approach)*] APPROACH [RUNWAY (number)];

	k) CLEARED STRAIGHT-IN [*(type of approach)*] APPROACH [RUNWAY *(number)*];
	l) REPORT VISUAL;
… when a pilot requests a	m) REPORT RUNWAY [LIGHTS] IN SIGHT;
	n) *REQUEST VISUAL APPROACH;
	o) CLEARED VISUAL APPROACH RUNWAY (number);
… to request if a pilot is able to accept a visual approach	p) ADVISE ABLE TO ACCEPT VISUAL APPROACH RUNWAY (number);
… in case of successive visual approaches when the pilot of a succeeding aircraft has reported having the preceding aircraft in sight	q) CLEARED VISUAL APPROACH RUNWAY (number), MAINTAIN OWN SEPARATION FROM PRECEDING (aircraft type and wake turbulence category as appropriate) [CAUTION WAKE TURBULENCE]

Circumstances	*Phraseologies*
	r) REPORT (significant point); [OUTBOUND, or INBOUND];
	s) REPORT COMMENCING PROCEDURE TURN;
	t) *REQUEST VMC DESCENT;
	u) MAINTAIN OWN SEPARATION;
	v) MAINTAIN VMC;
	w) ARE YOU FAMILIAR WITH (*name*) APPROACH PROCEDURE;
	x) *REQUEST *(type of approach)* APPROACH [RUNWAY *(number)*];

3.3 Holding Clearances

Circumstances	*Phraseologies*
…..visual	a) HOLD VISUAL [OVER] *(position)*, (*or* BETWEEN *(two prominent landmarks)*);
…published holding procedure over a facility or fix	b) CLEARED (*or* PROCEED) TO *(significant point, name of facility or fix)* [MAINTAIN (*or* CLIMB *or* DESCEND TO) *(level)*] HOLD [*(direction)*] AS PUBLISHED EXPECT APPROAC H CLEARANCE (*or* FURTHER CLEARANCE) AT *(time)*;
	c) * REQUEST HOLDING INSTRUCTIONS;

…when a detailed holding clearance is required.	d) CLEARED (*or* PROCEED) TO *(significant point, name of facility or fix)* [MAINTAIN (*or* CLIMB *or* DESCEND TO) *(level)*] HOLD [*(direction)*] [*(specified)* RADIAL, COURSE, INBOUND TRACK *(three digits)* DEGREES] [RIGHT (*or* LEFT) HAND PATTERN] [OUTBOUND TIME *(number)* MINUTES] EXPECT APPROACH CLEARANCE (*or* FURTHER CLEARANCE) AT *(time) (additional instructions, if necessary)*;
	e) CLEARED TO THE *(three digits)* RADIAL OF THE *(name)* VOR AT *(distance)* DME FIX [MAINTAIN (*or* CLIMB *or* DESCEND TO *(level)*] HOLD [*(direction)*] [RIGHT (*or* LEFT) HAND PATTERN] [OUTBOUND TIME *(number)* MINUTES] EXPECT APPROACH CLEARANCE (*or* FURTHER CLEARANCE) AT *(time)* *(additional instructions, if necessary)*;

3.4 Expected Approach Time

Circumstances	*Phraseologies*
	a) NO DELAY EXPECTED;
	b) EXPECTED APPROACH TIME *(time)*;
	c) REVISED EXPECTED APPROACH TIME *(time)*;
	d) DELAY NOT DETERMINED *(reasons)*.

4 Phraseologies for Use on And In The Vicinity of the Aerodrome

4.1 **Identification of Aircraft**

Circumstances	Phraseologies
	SHOW LANDING LIGHTS.

4.2 **Acknowledgement by Visual Means**

Circumstances	Phraseologies
	a) ACKNOWLEDGE BY MOVING AILERONS (*or* RUDDER);
	b) ACKNOWLEDGE BY ROCKING WINGS;
	c) ACKNOWLDEGE BY FLASHING LANDING LIGHTS;

4.3 **Starting Procedures**

Circumstances	Phraseologies
…to request permission to start engines	a) * [*aircraft location*] REQUEST START UP; b) *[*aircraft location*] REQUEST START UP, INFORMATION *(ATIS identification);*
…ATC replies	c) § START UP APPROVED;
	d) § START UP AT *(time);*
	e) § EXPECTED START UP AT *(time)*;
	f) § START UP AT OWN DISCRETION;
	g) § EXPECT DEPARTURE *(time)* START UP AT OWN DISCRETION.

4.4 **Push-Back Procedures**

Circumstances	*Phraseologies*
Note - When local procedures so prescribe, authorisation for pushback should be obtained from the control tower. …aircraft/ATC	a) *[*aircraft location*] REQUEST PUSHBACK; b) § PUSHBACK APPROVED; c) § STAND BY; d) § PUSHBACK AT OWN DISCRETION; e) § EXPECT *(number)* MINUTES DELAY DUE *(reason)*;

4.5 **Towing Procedures**

Circumstances	*Phraseologies*
† Denotes transmission from aircraft/ tow vehicle combination.	a) † REQUEST TOW [*company name*] *(aircraft type)* FROM *(location)* TO *(location)*;
…ATC response	b) § TOW APPROVED VIA *(specific routing to be followed)*;
	c) § HOLD POSITION;
	d) § STAND BY.

4.6 **To Request Time Check and/ Or Aerodrome Data for Departure**

Circumstances	*Phraseologies*
	a) *REQUEST TIME CHECK;
	b) TIME *(time)*;
…when no ATIS broadcast is available	c) *REQUEST DEPARTURE INFORMATION;

	d) RUNWAY *(number)*, WIND *(direction and speed)* *(units)* QNH (*or* QFE) *(number)* [*(units)*] TEMPERATURE [MINUS] *(number)*, [VISIBILITY *(distance)* *(units)* (*or* RUNWAY VISUAL RANGE (*or* RVR) *(distance)* *(units)*] [TIME *(time)*].
	Note - If multiple visibility and RVR observations are available, those that represent the roll- out/stop end zone should be used for take- off.

4.7 **Taxi Procedures**

Circumstances	*Phraseologies*
…for departure	a) *[*aircraft type*] [*wake turbulence category if "heavy"*] [*aircraft location*] REQUEST TAXI [*intentions*];
	b) *[*aircraft type*] [*wake turbulence category if "heavy"*] [aircraft location] (flight rules) TO (*aerodrome of destination*) REQUEST TAXI [*intentions*];
	c) TAXI TO HOLDING POINT [*number*] [RUNWAY *(number)*] [HOLD SHORT OF RUNWAY *(number)* or, CROSS RUNWAY *(number)*] [TIME *(time)*];
…where detailed taxi instructions are required	d) *[*aircraft type*] [*wake turbulence category if "heavy"*] REQUEST DETAILED TAXI INSTRUCTIONS;

	e) TAXI TO HOLDING POINT [*(number)*] [RUNWAY *(number)* VIA*(specific route to be followed)* [TIME *(time)*] [HOLD SHORT OF RUNWAY *(number)* or, CROSS RUNWAY *(number)*];
…where aerodrome information is not available from an alternative source such as ATIS	f) TAXI TO HOLDING POINT [*(number)*] *(followed by aerodrome information as applicable)* [TIME *(time)*];
	g) TAKE (*or* TURN) FIRST (*or* SECOND) LEFT (*or* RIGHT);
	h) TAXI VIA *(identification of taxiway)*;
	i) TAXI VIA RUNWAY *(number)*;
	j) TAXI TO TERMINAL (*or other location, e.g*. GENERAL AVIATION AREA) [STAND *(number)*];
…for helicopter operations	k) * REQUEST AIR-TAXIING FROM (*or* VIA) TO *(location or routing as appropriate)*;
	l) § AIR-TAXI TO (*or* VIA) *(location or routing as appropriate)* [CAUTION *(dust, blowing snow, loose debris, taxiing light aircraft, personnel, etc.)*]
	a) § AIR TAXI VIA *(direct, as requested, or*

	specified route) TO *(location, heliport, operating or movement area, active or inactive runway).* AVOID *(aircraft or vehicles or personnel)*;
….after landing	b) * REQUEST BACKTRACK;
	c) BACKTRACK APPROVED;
	d) BACKTRACK RUNWAY *(number)*;
	q) *[*(aircraft location)*] REQUEST TAXI TO *(destination on aerodrome)*;
	r) TAXI STRAIGHT AHEAD;
	aa) TAXI WITH CAUTION;
	bb) GIVE WAY TO *(description and position of other aircraft)*;
	cc) *GIVING WAY TO *(traffic)*;
	dd) *TRAFFIC *(or type of aircraft)* IN SIGHT;
	ee) TAXI INTO HOLDING BAY;
	ff) FOLLOW *(description of other aircraft or vehicle)*;
	gg) VACATE RUNWAY;
	hh) *RUNWAY VACATED;
	ii) EXPEDITE TAXI [*(reason)*];
	jj) * EXPEDITING;
	kk) [CAUTION] TAXI SLOWER [*reason*];
	ll) *SLOWING DOWN.

4.8 Holding

Circumstances	*Phraseologies*

	a) ‡ HOLD *(direction)* OF *(position, runway number, etc)*;
	a) ‡ HOLD POSITION;
	b) ‡ HOLD *(distance)* FROM *(position)*;
… to hold not closer to a runway than specified in Section 3, Chapter 1,Para 4.7.	c) ‡HOLD SHORT OF *(position)*;
	d) *HOLDING;
	e) *HOLDING SHORT.
	‡ Requires specific acknowledgement from the pilot.
	The procedure words ROGER and WILCO is insufficient acknowledgement of the instructions HOLD, HOLD POSITION and HOLD SHORT OF *(position).* In each case the acknowledgment shall be by the phraseology HOLDING or HOLDING SHORT, as appropriate.

4.9 **To Cross A Runway**

Circumstances	*Phraseologies*
	a) * REQUEST CROSS RUNWAY *(number)*; *Note - If the control tower is unable to see the crossing aircraft (e.g. night, low visibility, etc), the instruction should always be accompanied by a request to report when the aircraft has vacated*

	and is clear of the runway.
	b) CROSS RUNWAY *(number)* [REPORT VACATED];
	c) EXPEDITE CROSSING RUNWAY *(number)* TRAFFIC *(aircraft type) (distance)* (MILES) FINAL;
	d) TAXI TO HOLDING POINT [*number*] [RUNWAY *(number)* VIA *(specific route to be followed)*, [HOLD SHORT OF RUNWAY *(number)* or [CROSS RUNWAY *(number)*].

Note - The pilot will, when requested, report "RUNWAY VACATED" when the aircraft is well clear of the runway.	c) *RUNWAY VACATED.

4.10 **Preparation for Take-Off**

Circumstances	*Phraseologies*
	a) UNABLE TO ISSUE *(designator)* DEPARTURE *(reasons)*;
	b) REPORT WHEN READY [FOR DEPARTURE];

	c) ARE YOU READY [FOR DEPARTURE]? ;
	d) ARE YOU READY FOR IMMEDIATE DEPARTURE? ;
	e) *READY;
… if unable to issue take-off clearance	f) STANDBY DEPARTURE
…clearance to enter runway and await take-off clearance	g) LINE UP [AND WAIT];
	h) # LINE UP RUNWAY *(number)*;
	i) LINE UP. BE READY FOR IMMEMDIATE DEPARTURE;
… conditional clearances	j) *(condition)* LINE UP *(brief reiteration of the condition)*.;
…acknowledgement of a conditional clearance	k) **(condition)* LINING UP;
…confirmation or otherwise correction of the readback of conditional clearance	l) [THAT IS] CORRECT (*or* NEGATIVE) [I SAY AGAIN] … *(as appropriate)*).
	# Where there is the possibility of confusion during multiple runway operations.
	Provisions concerning the use of conditional clearances are contained in Section 8, Chapter1,Paragraph 5.8.

4.11 **Take-Off Clearance**

Circumstances	*Phraseologies*
	a) RUNWAY *(number)* CLEARED FOR TAKE- OFF [REPORT AIRBORNE];
…when reduced runway separation is used.	*b) (traffic information)* RUNWAY *(number)* CLEARED FOR TAKE-OFF;

…when take-off clearance has not been complied with.	c) TAKE-OFF IMMEDIATELY OR VACATE RUNWAY [*(instructions)*];
	d) TAKE OFF IMMEDIATELY OR HOLD SHORT OF RUNWAY;
…to cancel a take-off clearance.	e) HOLD POSITION, CANCEL TAKE-OFF I SAY AGAIN CANCEL TAKE-OFF *(reasons)*;
	f) *HOLDING;
… to stop a take-off after an aircraft has commenced take-off roll.	g) STOP IMMEDIATELY [*(repeat aircraft call sign)* STOP IMMEDIATELY];
	h) *STOPPING;
…for helicopter operations	i) CLEARED FOR TAKE-OFF [FROM *(location)*] *(present position, taxiway, final approach and take-off area, runway and number)*;
	j) * REQUEST DEPARTURE INSTRUCTIONS;
	k) AFTER DEPARTURE TURN RIGHT (*or* LEFT *or* CLIMB) *(instructions as appropriate);*
	Note - HOLDING and STOPPING are the procedural responses to (e) and (g) respectively.

4.12 **Turn or Climb Instructions After Take-Off**

Circumstances	*Phraseologies*
	a) REQUEST RIGHT (*or* LEFT) TURN
	b) RIGHT (*or* LEFT) TURN APPROVED;
	c) WILL ADVISE LATER FOR RIGHT (*or* LEFT) TURN;
…to request airborne time	d) REPORT AIRBORNE;

	e) AIRBORNE *(time)*;
	f) AFTER PASSING *(level) (instructions)*;
… heading to be followed	g) CONTINUE RUNWAY HEADING *(instructions)*;
…when a specific track is to be followed	h) TRACK EXTENDED CENTRE LINE *(instructions)*;
	i) CLIMB STRAIGHT AHEAD *(instructions)*;

4.13 **Entering an Aerodrome Traffic Circuit**

Circumstances	*Phraseologies*
	a) *[*aircraft type*] *(position) (level)* FOR LANDING;
	b) JOIN [*(direction of circuit)*] *(position in circuit) (runway number)* [SURFACE WIND] *(direction and speed) (units)* [TEMPERATURE [MINUS] *(number)*] QNH *(or* QFE*) (number)* [*(units)*] [TRAFFIC *detail)*] ;
	c) MAKE STRAIGHT-IN APPROACH, RUNWAY
	(number) [SURFACE] WIND *(direction and speed) (units)* [TEMPERATURE [MINUS] *(number)*] QNH (*or* QFE) *(number)* [*(units)*] [TRAFFIC *(detail)*];
… when right hand traffic circuit in use	d) JOIN RIGHT HAND *(position in circuit) (runway number)* [SURFACE] WIND *(direction and speed) (units)* [TEMPERATURE [MINUS] *(number)*] QNH (*or* QFE) *(number)* [*(units)*] [TRAFFIC *(detail)*];
…when ATIS information is available	e) **(aircraft type) (position) (level)*

	INFORMATION *(ATIS identification)* FOR LANDING;
	f) JOIN *(position in circuit)* [RUNWAY *(number)*] QNH (*or* QFE) *(number)* [*(units)*] [TRAFFIC *(detail)*].

4.14 **In the Circuit**

Circumstances	*Phraseologies*
	a) *(*position in circuit, e.g.* DOWNWIND/FINAL);
	b) NUMBER… FOLLOW *(aircraft type and position)* [*additional instructions if required*].

4.15 **Approach Instructions**

Circumstances	*Phraseologies*
Note - The report "LONG FINAL" is made when an aircraft turns on to final approach at a distance greater than 7km (4NM) from touchdown or when an aircraft on a straight-in approach is 15km (8NM) from touchdown. In both cases a report "FINAL" is required at 7km (4NM) from touchdown.	a) MAKE SHORT APPROACH; b) MAKE LONG APPROACH (*or* EXTEND DOWNWIND); c) REPORT BASE (*or* FINAL, *or* LONG FINAL); d) CONTINUE APPROACH [PREPARE FOR POSSIBLE GO AROUND].

4.16 **Landing Clearance**

Circumstances	*Phraseologies*
	a) RUNWAY *(number)* CLEARED TO LAND;

… when reduced runway separation is used.	*b) (traffic information)* RUNWAY *(number)* CLEARED TO LAND;
…special operations	c) CLEARED TOUCH AND GO;
	d) MAKE FULL STOP;
…to make an approach along, or parallel to a runway, descending to an agreed minimum level	e) *REQUEST LOW APPROACH *(reasons)*;
	f) CLEARED LOW APPROACH [RUNWAY *(number)*] [*(altitude restriction if required) (go around instructions)*];
… to flypast the control tower or other observation point for the purpose of visual inspection by persons on the ground.	g) *REQUEST LOW PASS *(reasons)*;
	h) CLEARED LOW PASS [*as in f)*];
… for helicopter operations.	i) *REQUEST STRAIGHT-IN (*or* CIRCLING APPROACH, LEFT (*or* RIGHT) TURN TO *(location)*);
	j) MAKE STRAIGHT-IN (*or* CIRCLING APPROACH, LEFT (*or* RIGHT) TURN TO *(location, runway, taxiway, final approach and take-off area)*)[ARRIVAL (*or* ARRIVAL ROUTE) *(number, name or code)*] [HOLD SHORT OF *(active runway, extended runway centre line, other)*] [REMAIN *(direction or distance)* FROM *(runway, runway centre line, other helicopter or aircraft)*] [CAUTION *(power lines, unlighted obstructions, wake turbulence, etc)*] CLEARED TO LAND.

4.17 **Delaying Aircraft**

Circumstances	*Phraseologies*
	a) CIRCLE THE AERODROME;
	b) ORBIT (RIGHT, *or* LEFT) [FROM PRESENT POSITION];
	c) MAKE ANOTHER CIRCUIT.

4.18 **Missed Approach**

Circumstances	*Phraseologies*
	a) GO AROUND;
	b) *GOING AROUND.

4.19 **Information to Aircraft**

Circumstances	*Phraseologies*
…when pilot requested visual inspection of landing gear	a) LANDING GEAR APPEARS DOWN;
	b) RIGHT (*or* LEFT, *or* NOSE) WHEEL APPEARS UP (*or* DOWN);
	c) WHEELS APPEAR UP;
	d) RIGHT (*or* LEFT, *or* NOSE) WHEEL DOES NOT APPEAR UP (*or* DOWN);
	e) CAUTION WAKE TURBULENCE [FROM ARRIVING (*or* DEPARTING) *(type of aircraft)*] [*additional information as required*];
	f) CAUTION JET BLAST;
	g) CAUTION SLIPSTREAM.

4.20 Runway Vacating and Communications after Landing

Circumstances	*Phraseologies*
	a) CONTACT GROUND *(frequency)*;
	b) WHEN VACATED CONTACT GROUND *(frequency)*;
	c) EXPEDITE VACATING;
	d) YOUR STAND (*or* GATE) *(designation)*;
	e) TAKE (*or* TURN) FIRST (*or* SECOND, *or* CONVENIENT) LEFT (*or* RIGHT) AND CONTACT GROUND *(frequency)*;
… for helicopter operations.	f) AIR-TAXI TO HELICOPTER STAND (*or*) HELICOPTER PARKING POSITION *(area)*;
	g) AIR-TAXI TO (*or* VIA) *(location or routing as appropriate)* [CAUTION *(dust, blowing snow, loose debris, taxing light aircraft, personnel,*
	h) AIR-TAXI VIA *(direct, as requested, or specified route)* TO *(location, heliport, operating or movement area, active or inactive runway)*.

5 Coordination Between ATS Units

5.1 Estimates and Revisions

Circumstances	Phraseologies
	a) ESTIMATE [*direction of flight*] *(aircraft call sign)* [SQUAWKING *(SSR Code)*] *(type)* ESTIMATED *(significant point) (time) (level)* (*or* DESCENDING FROM *(level)* TO *(level)* [SPEED *(filed TAS)*] *(route)* [REMARKS];
…sending unit	b) ESTIMATE *(significant point)* ON *(aircraft call sign)*;
..receiving unit reply (if flight plan details are not available)	c) NO DETAILS;
…receiving unit reply (if flight plan details are available)	*(aircraft type) (destination)*;
…sending unit reply.	[SQUAWKING *(SSR Code)* [ESTIMATED] *(significant point) (time)* AT *(level)*; *Note - In the event that flight plan details are not available the receiving station shall reply to b) NO DETAILS and transmitting station shall pass full estimate as in a).*
	d) ESTIMATE UNMANNED FREE BALLOON(S) *(identification and classification)* ESTIMATED OVER *(place)* AT *(time)* REPORTED FLIGHT LEVEL(S) *(figure or figures)* [*or* FLIGHT

	LEVEL UNKNOWN] MOVING *(direction)* ESTIMATED GROUND SPEED *(figure)* *(other pertinent information, if any)*;
	e) REVISION *(aircraft call sign)* *(details as necessary)*.

5.2 Transfer Of Control

Circumstances	*Phraseologies*
	a) REQUEST RELEASE OF *(aircraft call sign)*;
	b) *(aircraft call sign)* RELEASED [AT *(time)*] [*conditions/restrictions*];
	c) IS *(aircraft call sign)* RELEASED [FOR CLIMB (*or* DESCENT)];
	d) *(aircraft call sign)* NOT RELEASED [UNTIL *(time or significant point)*];
	e) UNABLE *(aircraft call sign)* [TRAFFIC IS *(details)*].

5.3 Change Of Clearance

Circumstances	*Phraseologies*
	a) MAY WE CHANGE CLEARANCE OF *(aircraft call sign)* TO *(details of alteration proposed)*;
	b) AGREED TO *(alteration of clearance)* OF *(aircraft call sign)*;
	c) UNABLE *(aircraft call sign)*;
	d) UNABLE *(desired route, level, etc.)* [FOR *(aircraft call sign)*] [DUE *(reason)*] *(alternative clearance proposed)*.

5.4 Approval Request

Circumstances	*Phraseologies*
	a) APPROVAL REQUEST *(aircraft call sign)* ESTIMATED DEPARTURE FROM *(significant point)* AT *(time)*;
	b) *(aircraft call sign)* REQUES APPROVED [*(restriction if any)*]; T
	c) *(aircraft call sign)* UNABLE *(alternative instructions)*.

5.5 Inbound Release

Circumstances	Phraseologies
	[INBOUND RELEASE] *(aircraft call sign)* [SQUAWKING *(SSR Code)*] *(type)* FROM *(departure point)* RELEASED AT *(significant point, or time, or level)* CLEARED TO AND ESTIMATING *(clearance limit) (time)* AT *(level)* [EXPECTED APPROACH TIME *or* NO DELAY EXPECTED] CONTACT AT *(time)*.

5.6 Handover

Circumstances	Phraseologies
	HANDOVER *(aircraft call sign)* SQUAWKING *(SSR Code)*] POSITION *(aircraft position) (level)*.

5.7 Expedition Of Clearance

Circumstances	Phraseologies
	a) EXPEDITE CLEARANCE *(aircraft call sign)* EXPECTED DEPARTURE FROM *(place)* AT *(time)*;
	b) EXPEDITE CLEARANCE *(aircraft call sign)* [ESTIMATED] OVER *(place)* AT *(time)* REQUESTS *(level or route, etc)*.

5.8 Phraseologies to be used related to CPDLC

Circumstances	Phraseologies
… failure of CPDLC	***a)*** [ALL STATIONS] CPDLC FAILURE

	(instructions).
… failure of a single CPDLC message	***b)*** CPDLC MESSAGE FAILURE (appropriate clearance, instruction, information or request).
…to correct CPDLC clearances, instructions, information or requests	***c)*** DISREGARD CPDLC (message type) MESSAGE, BREAK (correct clearance, instruction, information or request).
…to instruct all stations or a specific flight to avoid sending CPDLC requests for a limited period of time	***d)*** [ALL STATIONS]STOP SENDING CPDLC REQUESTS [UNTIL ADVISED][(reason)].
…to resume normal use of CPDLC	***e)*** [ALL STATIONS] RESUME NORMAL CPDLC OPERATIONS.

6 General *ATS Surveillance* Phraseologies

6.1 Identification Of Aircraft

Circumstances	*Phraseologies*
	a) REPORT HEADING [AND FLIGHT LEVEL (*or* ALTITUDE)];
	b) FOR IDENTIFICATION TURN LEFT (*or* RIGHT) HEADING *(three digits)*;
	c) TRANSMIT FOR IDENTIFICATION AND REPORT HEADING;
	d) RADAR CONTACT [*position*];
	e) IDENTIFIED [*position*];
	f) NOT IDENTIFIED [*reason*], [RESUME (*or* CONTINUE OWN NAVIGATION].

6.2 Position Information

Circumstances	*Phraseologies*
	POSITION *(distance)* *(direction)* OF *(significant point)* (*or* OVER *or* ABEAM *(significant point)*).

6.3 Vectoring Instructions

Circumstances	*Phraseologies*
	a) LEAVE *(significant point)* HEADING *(three digits)*;
	b) CONTINUE HEADING *(three digits)*;
	c) CONTINUE PRESENT HEADING;
	d) FLY HEADING *(three digits)*;
	e) TURN LEFT (*or* RIGHT) HEADING *(three digits)* [*reason*];
	f) TURN LEFT (*or* RIGHT) *(number of degrees)* DEGRESS [*reason*];
	g) STOP TURN HEADING *(three digits)*;
	h) FLY HEADING *(three digits)*, WHEN ABLE PROCEED DIRECT *(name)* *(significant point)*;
	i) HEADING IS GOOD.

6.4 Termination of Vectoring

Circumstances	*Phraseologies*
	a) RESUME OWN NAVIGATION *(position of aircraft)* *(specific instructions)*;

	b) RESUME OWN NAVIGATION [DIRECT] *(significant point)* [MAGNETIC TRACK *(three digits)* DISTANCE *(number)* MILES)].

6.5 Manoeuvres

Circumstances	*Phraseologies*
	a) MAKE A THREE SIXTY TURN LEFT (*or* RIGHT) [*reason*];
	b) ORBIT LEFT (*or* RIGHT) [*reason*];
…(in case of unreliable directional instruments on board aircraft)	c) MAKE ALL TURNS RATE ONE (*or* RATE HALF, *or* *(number)* DEGREES PER SECOND)

	START AND STOP ALL TURNS ON THE COMMAND "NOW";
	d) TURN LEFT (*or* RIGHT) NOW;
Note - When it is necessary to specify a reason for vectoring or for the above manoeuvres, the following phraseologies should be used: *a) DUE TRAFFIC;* *b) FOR SPACING;* *c) FOR DELAY;* *d) FOR DOWNWIND (or BASE, or FINAL).*	e) STOP TURN NOW.

6.6 Speed Control

Circumstances	*Phraseologies*
	a) REPORT SPEED;
	b) *SPEED *(number)* KNOTS;
	c) MAINTAIN *(number)* KNOTS [OR GREATER (*or* OR LESS)] [UNTIL*(signification point)*];
	d) DO NOT EXCEED *(number)* KNOTS;
	e) MAINTAIN PRESENT SPEED;
	f) INCREASE (*or* REDUCE) SPEED TO *(number)* KNOTS [OR GREATER (*or* OR LESS)];
	g) INCREASE (*or* REDUCE) SPEED BY *(number)* KNOTS;
	h) RESUME NORMAL SPEED;
	i) REDUCE TO MINIMUM APPROACH SPEED;
	j) REDUCE TO MINIMUM CLEAN SPEED;
	k) RESUME PUBLISHED SPEED
	l) NO [ATC] SPEED RESTRICTIONS.

AIR-GROUND COMMUNICATIONS FAILURE

Note 4.— See also Chapter 6, 6.3.2.5, concerning departure clearances containing no geographical or time limit for cleared level below the flight planned level and procedures to be applied in relation to an aircraft experiencing air-ground communication failure under such circumstances.

6.7 Position Reporting

Circumstances	*Phraseologies*
… to omit position reports	a) OMIT POSITION REPORTS [UNTIL *(specify)*];
	b) NEXT REPORT AT *(significant point)*;
	c) REPORTS REQUIRED ONLY AT *(significant point(s))*;
	d) RESUME POSITION REPORTING.

6.8 Traffic Information and Avoiding Action

Circumstances	*Phraseologies*
	a) TRAFFIC *(number)* O'CLOCK *(distance)* *(direction of flight)* [*any other pertinent information*]:
	1) UNKNOWN;
	2) SLOW MOVING;
	3) FAST MOVING;
	4) CLOSING;
	5) OPPOSITE (*or* SAME) DIRECTION;
	6) OVERTAKING;
	7) CROSSING LEFT TO RIGHT (*or* RIGHT TO LEFT);
…(if known)	8) *(aircraft type)*;
	9) *(level)*;
	10) CLIMBING (*or* DESCENDING);
…to request avoiding action	b) * REQUEST VECTORS;

	c) DO YOU WANT VECTORS?;
…when passing unknown traffic	d) CLEAR OF TRAFFIC [*appropriate instructions*];
… for avoiding action	e) TURN LEFT (*or* RIGHT) IMMEDIATELY HEADING *(three digits)* TO AVOID [UNIDENTIFIED] TRAFFIC AT *(bearing by clock-reference and distance)*.
	f) TURN LEFT (*or* RIGHT) *(number of degrees)* DEGREES IMMEDIATELY TO AVOID [UNIDENTIFIED] TRAFFIC AT *(bearing by clock-reference and distance)*.

6.9 Communications and Loss of Communications

Circumstances	*Phraseologies*
	a) [IF] RADIO CONTACT IS LOST (instructions);
	b) IF NO TRANSMISSIONS RECEIVED FOR (number) MINUTES (or SECONDS) (instructions);
	c) REPLY NOT RECEIVED (instructions);
….if loss of communications suspected	d) IF YOU READ [manoeuvre instructions or SQUAWK (code or IDENT)];
	e) (Manoeuvre, SQUAWK or IDENT) OBSERVED. POSITION (position of aircraft) [(instructions)].

6.10 Termination of Radar Service

Circumstances	*Phraseologies*
	a) RADAR SERVICE (or IDENTIFICATION) TERMINATED [DUE (reason)](instructions).
	b) WILL SHORTLY LOSE IDENTIFICATION *(appropriate instructions or information)*;
	c) IDENTIFICATION LOST [*reason*] *(instructions)*.

6.11 Radar Equipment Degradation

Circumstances	*Phraseologies*
	a) SECONDARY RADAR OUT OF SERVICE *(appropriate instructions or information)*;
	b) PRIMARY RADAR OUT OF SERVICE *(appropriate instructions or information)*.

7 Radar in an Approach Control Service

7.1 Vectoring For Approach

Circumstances	***Phraseologies***
	a) VECTORING FOR *(type of approach)* APPROACH RUNWAY *(number)* ;
	b) VECTORING FOR VISUAL APPROACH RUNWAY *(number)* REPORT FIELD (*or* RUNWAY) IN SIGHT;

	c) VECTORING FOR *(positioning in the circuit)*;
	d) VECTORING FOR SURVEILLANCE RADAR APPROACH RUNWAY *(number)*;
	e) VECTORING FOR PRECISION APPROACH RUNWAY *(number)*;
	f) *(type)* APPROACH NOT AVAILABLE DUE *(reason) (alternative instructions)*.

7.2 Vectoring For ILS and Other Approach Procedures

Circumstances	*Phraseologies*
	a) POSITION *(number)* MILES from *(fix)*. TURN LEFT(*or* RIGHT) HEADING *(three digits)*;
	b) YOU WILL INTERCEPT *(Final Approach Course or radio aid) (distance)* FROM (*significant point or* TOUCHDOWN);
…when a pilot wishes to be positioned a specific distance from touchdown.	c) * REQUEST *(distance)* FINAL;
	d) CLEARED FOR *(type of approach)* APPROACH RUNWAY *(number)*;
…instructions and information	e) REPORT ESTABLISHED ON LOCALIZER (or ON [GLS/RNP/MLS] [FINAL] APPROACH [COURSE]);
	f) CLOSING FROM LEFT (*or* RIGHT) [REPORT ESTABLISHED];

	g) TURN LEFT (*or* RIGHT) HEADING *(three digits)* [TO INTERCEPT] *or* [REPORT ESTABLISHED];
	h) EXPECT VECTOR ACROSS THE *(LOCALISER or [GLS/ RNP/ MLS] FINAL APPROACH COURSE or radio aid) (reason)*;
	i) THIS TURN WILL TAKE YOU THROUGH *THE (LOCALISER or [GLS/RNP/MLS] FINAL APPROACH COURSE or radio aid)* [*reason*];

	j) TAKING YOU THROUGH THE (LOCALISER or [GLS/RNP/MLS] FINAL APPROACH COURSE or radio aid) [reason];
	k) MAINTAIN *(altitude)* UNTIL GLIDE PATH INTERCEPTION;
	l) REPORT ESTABLISHED ON GLIDE PATH;
	m) INTERCEPT *(LOCALISER or [GLS/RNP/MLS] [FINAL] APPROACH [COURSE] or radio aid) [RUNWAY (number)]* [REPORT ESTABLISHED].

7.3 Manoeuvre during Independent and Dependent Parallel Approaches

Circumstances	*Phraseologies*
	a) CLEARED FOR *(type of approach)* APPROACH RUNWAY *(number)* LEFT (*or*

	RIGHT);
	b) YOU HAVE CROSSED THE LOCALISER (or GLS/RNP/MLS FINAL APPROACH COURSE). TURN LEFT (*or* RIGHT) IMMEDIATELY AND RETURN TO THE LOCALISER (or GLS/RNP/MLS FINAL APPROACH COURSE) [RUNWAY (number)];
	c) ILS RUNWAY *(number)* LEFT (*or* RIGHT) LOCALISER FREQUENCY IS *(frequency)*;
…for avoidance action when an aircraft is observed penetrating the NTZ	d) TURN LEFT (*or* RIGHT) *(number)* DEGREES (*or* HEADING) *(three digits)* IMMEDIATELY TO AVOID TRAFFIC [DEVIATING FROM ADJACENT APPROACH] CLIMB TO *(altitude)*.
…for avoidance action below 120m (400ft) above the runway threshold elevation where parallel approach obstacle assessment surfaces (PAOAS) criteria are being applied.	e) CLIMB TO *(altitude)* IMMEDIATELY TO AVOID TRAFFIC [DEVIATING FROM ADJACENT APPROACH] *(further instructions).*

8 Surveillance Radar Approach

8.1 Provision of Service

Circumstances	*Phraseologies*
	a) THIS WILL BE A SURVEILLANCE RADAR APPROACH RUNWAY *(number)* TERMINATING AT *(distance)* FROM TOUCHDOWN, OBSTACLE CLEARANCE ALTITUDE (*or* HEIGHT) *(number)* (FEET) CHECK YOUR MINIMA [IN CASE OF GO AROUND*(instructions)*;
	b) APPROACH INSTRUCTIONS WILL BE TERMINATED AT *(distance)* FROM TOUCHDOWN

8.2 Elevation

Circumstances	*Phraseologies*
	a) COMMENCE DESCENT NOW [TO MAINTAIN A *(number)* DEGREE GLIDE PATH].
	b) *(distance)* FROM TOUCHDOWN ALTITUDE (*or* HEIGHT) SHOULD BE *(numbers and units)*.

8.3 Position

Circumstances	Phraseologies
	(distance) FROM TOUCHDOWN.

8.4 Checks

Circumstances	Phraseologies
	a) CHECK GEAR DOWN [AND LOCKED];
	b) OVER THRESHOLD.

8.5 Completion of Approach

Circumstances	Phraseologies
	a) REPORT VISUAL;
	b) REPORT RUNWAY [LIGHTS] IN SIGHT;
	c) APPROACH COMPLETED [CONTACT *(unit)*].

9 PAR Approach

9.1 Provision Of Service

Circumstances	Phraseologies
	a) THIS WILL BE A PRECISION RADAR APPROACH RUNWAY *(number)*;
	b) PRECISION APPROACH NOT AVAILABLE DUE TO *(reason)* *(alternative instructions)*;
	c) IN CASE OF GO AROUND *(instructions)*.

9.2 Communications

Circumstances	Phraseologies
When a read back is not required by ATC	a) NO NEED TO ACKNOWLEDGE
	b) DO NOT ACKNOWLEDGE FURTHER TRANSMISSIONS;
	c) REPLY NOT RECEIVED, WILL CONTINUE INSTRUCTIONS.

9.3 Azimuth

Circumstances	Phraseologies
	a) CLOSING [SLOWLY (*or* QUICKLY)] [FROM THE LEFT (*or* FROM THE RIGHT)];
	b) HEADING IS GOOD;
	c) ON TRACK;
	d) SLIGHTLY (*or* WELL, *or* GOING) LEFT (*or* RIGHT) OF TRACK;
	e) *(number)* METERS LEFT (*or* RIGHT) OF TRACK.

9.4 Elevation

Circumstances	Phraseologies
	a) APPROACHING GLIDE PATH;
	b) COMMENCE DESCENT NOW [AT *(number)* FEET PER MINUTE (*or* ESTABLISH A *(number)* DEGREE GLIDE PATH)];

	c) RATE OF DESCENT IS GOOD;
	d) ON GLIDE PATH;
	e) SLIGHTLY (*or* WELL, *or* GOING) ABOVE (*or* BELOW) GLIDE PATH;
	f) [STILL] *(number)* (FEET) TOO HIGH (*or* TOO LOW);
	g) ADJUST RATE OF DESCENT;
	h) COMING BACK [SLOWLY (*or* QUICKLY)] TO THE GLIDE PATH;

	i) RESUME NORMAL RATE OF DESCENT;
	j) ELEVATION ELEMENT UNSERVICEABLE *(to be followed by appropriate instructions)*;
	k) *(distance)* FROM TOCHDOWN. ALTITUDE (*or* HEIGHT) SHOULD BE *(numbers and units)*.

9.5 Position

Circumstances	*Phraseologies*
	a) *(distance)* FROM TOUCHDOWN;
	b) OVER APPROACH LIGHTS;
	c) OVER THRESHOLD.

9.6 Checks

Circumstances	*Phraseologies*
	a) CHECK GEAR DOWN AND LOCKED;
	b) CHECK DECISION ALTITUDE (*or* HEIGHT).

9.7 Completion of Approach

Circumstances	*Phraseologies*
	a) REPORT VISUAL;
	b) REPORT RUNWAY [LIGHTS] IN SIGHT;
	c) APPROACH COMPLETED [CONTACT

	(unit)].

9.8 Missed Approach

Circumstances	*Phraseologies*
	a) CONTINUE VISUALLY OR GO AROUND [*missed approach instructions*];
	b) GO AROUND IMMEDIATELY [*missed approach instructions*] *(reasons)*;
	c) ARE YOU GOING AROUND?;
	d) IF GOING AROUND *(appropriate instructions)*;
	e) *GOING AROUND.

10 Secondary Surveillance Radar (SSR) Phraseologies

10.1 To Request The Capability of The SSR Equipment.

Circumstances	*Phraseologies*
	a) ADVISE TRANSPONDER CAPABILITY;
	b) *TRANSPONDER*(as shown in the flight plan)*;
	c) *NEGATIVE TRANSPONDER.

10.2 To Instruct Setting Of Transponder.

Circumstances	*Phraseologies*
	a) FOR DEPARTURE SQUAWK *(code)*;
	b) SQUAWK *(code)*.

10.3 To Request The Pilot To Reselect The Assigned Mode And Code.

Circumstances	*Phraseologies*
	a) RESET SQUAWK [*(mode)*] *(code)*;

	b) * RESETTING *(mode)* *(code)*.

10.4 To Request Reselection Of Aircraft Identification.

Circumstances	*Phraseologies*
	RESET MODE S IDENTIFICATION.

10.5 To Request The Pilot To Confirm The Code Selected On The Aircraft's Transponder.

Circumstances	*Phraseologies*
	a) CONFIRM SQUAWK *(code)*;
	b) *SQUAWKING *(code)*.

10.6 To Request The Operation Of The IDENT Feature.

Circumstances	*Phraseologies*
	a) SQUAWK [*(code)*] [AND] IDENT;
	b) SQUAWK LOW;
	c) SQUAWK NORMAL.

10.7 To Request Temporary Suspension Of Transponder Operation.

Circumstances	*Phraseologies*
	SQUAWK STANDBY.

10.8 To Request Emergency Code.

Circumstances	*Phraseologies*

	SQUAWK MAYDAY [CODE SEVEN-SEVEN-ZERO- ZERO].

10.9 To Request Termination of Transponder Operation.

Circumstances	*Phraseologies*
	STOP SQUAWK.

10.10 To Request Transmission of Pressure Altitude.

Circumstances	*Phraseologies*
	SQUAWK CHARLIE.

10.11 To Request Pressure Setting Check and Confirmation of Level.

Circumstances	*Phraseologies*
	CHECK ALTIMETER SETTING AND CONFIRM *(level)*.

10.12 To Request Termination of Pressure Altitude Transmission Because of Faulty Operation.

Circumstances	*Phraseologies*
	STOP SQUAWK CHARLIE WRONG INDICATION.

10.13 To Request Level Check.

Circumstances	*Phraseologies*
	CONFIRM (level).

11 General ADS Phraseologies.

11.1 ADS Degradation.

Circumstances	Phraseologies
	ADS (*or* AUTOMATIC DEPENDANT SURVEILLANCE) OUT OF SERVICE *(appropriate information as necessary)*.

12 Alerting Phraseologies.

12.1 Low Altitude Warning

Circumstances	Phraseologies
	(aircraft call sign) LOW ALTITUDE WARNING, CHECK YOUR ALTITUDE IMMEDIATELY, QNH IS *(number)* [*(units)*]. [THE MINIMUM FLIGHT ALTITUDE IS *(altitude)*].

12.2 Terrain Alert

Circumstances	Phraseologies
	(aircraft call sign) TERRAIN ALERT *(suggested pilot action, if possible)*.

12.3 GNSS/RNAV

Phraseology <u>Reporting</u>

<u>distance:</u>

For RNAV… ―REPORT (number) _MILES' FROM (waypoint, fix, significant point, NAVAID, etc.) For GNSS… ―REPORT (number) _MILES' FROM (waypoint, fix, significant point, NAVAID, For DME… ―REPORT (number) _DME' FROM ((DME) facility name)‖

<u>Issuing crossing instructions:</u>

For DME equipped ―CROSS 25 _DME' AT 10,000‖…

For RNAV/GNSS equipped ―CROSS 24 _MILES'FROM (waypoint, fix, significant point, NAVAID, etc.) AT 10,000‖

<u>Phraseology for reporting RAIM status:</u>

―REPORT RAIM STATUS‖

<u>Different phraseology for reporting RAIM alerts:</u>

…―RAIM OUTAGE‖

...‖RAIM FAILURE‖

...‖RAIM STATUS ANNUNCIATION‖

...‖RAIM FLAG‖

...‖RAIM NOT AVAILABLE‖

...‖RAIM HOLE‖

...‖RAIM WARNING‖

...RAIM ALERT‖

Issuing clearances via arcs:

—CLEARED TO THE AIRPORT VIA 15 DME ARC… CLEARED VIA (number) MILE ARC- RNAVII

Requesting progress reports from aircraft on approach:

… —REPORT ESTABLISHED ON THE RNAV APPROACH COURSEII

Approach Clearances:

Clearances for RNAV(GNSS) approaches… —CLEARED TO THE (name) AIRPORT RNAV RWY 08 APPROACHII

Clearances for RNAV(GNSS LNAV) approaches… —CLEARED TO THE (name) AIRPORT RNAV RWY 08 APPROACHII

Clearances for RNAV(GNSS Baro-VNAV) approaches…—CLEARED TO THE (name) AIRPORT RNAV RWY 08 APPROACHII

Clearances for RNAV(GLS) approaches… —CLEARED TO THE (name) AIRPORT RNAV RWY08 APPROACHII

Clearances via fixes of a GNSS approach:

… —CLEARED VIA INITIAL APPROACH FIXII

… —CLEARED VIA INTERMEDIATE FIXII

… —CLEARED TO THE FINAL APPROACH FIXII

Clearances for RNAV STARs/SIDs:

Clear an aircraft flying an RNAV STAR to fly direct to…

—CLEARED DIRECT (waypoint/fix) MAINTAIN (altitude) EXPECT VECTORS TO FINAL APPROACHII

13 Readback of ATS Co-ordination Messages

Controllers must ensure they obtain a readback of any operationally significant information contained in telephone and intercom co-ordination messages, including:

a) Levels;

b) Headings;

c) Speed Restrictions;

d) Airways or route instructions;

e) Runway in use;

f) SSR Codes;

g) Pressure Settings;

h) Frequencies; and

i) Release and contact points.

Section 9 Emergency Procedures

Chapter 1 Aircraft Emergencies

1 Introduction

1.1 The circumstances of each aircraft emergency can vary to such an extent that detailed instructions cannot be given for every situation.

1.2 The procedures outlined in this section are intended as a general guide and controllers must use their own judgement when handling a particular emergency.

1.3 Procedures described in CATS-ATS Standards and Procedures may also be varied to meet an emergency situation, however, any reduction in separation, necessary to cope with an emergency, should be restored as soon as possible. Special arrangements, developed locally for handling emergencies, shall be documented in the Station Standing Instruction Manual.

2 Controllers Responsibility

2.1 Controllers must always be alert to the possibility of an aircraft emergency. A quick reaction to the situation may be necessary in certain circumstances; however, calm co-ordinated actions are essential in all situations.

2.2 Controllers shall offer as much assistance as possible to any aircraft which is considered to be in an emergency situation.

2.3 An emergency may require alerting action to be taken immediately or it may develop to that point later.

2.4 The shift supervisor or Officer-In-Charge, if available, should be informed as soon as practicable and, where more than one ATSU is involved, complete co-ordination must be maintained between units.

2.5 The supervisor or senior member of the shift should take charge of the operation. Controllers must be ready to give all possible assistance to the ACC, ARCC and other ATSUs.

2.6 In circumstances where an aircraft is experiencing an emergency or has declared minimum fuel, or in any other situation wherein the safety of the aircraft is not assured, the type of emergency and the circumstances experienced by the aircraft shall be reported by the transferring unit to the accepting unit and any other ATS unit that may be concerned with the flight and to the associated rescue coordination centres, if necessary.

2.7 ATSU shall, as necessary, use all available communication facilities to endeavour to establish and maintain communication with an aircraft in a state of emergency, and to request news of an aircraft.

3 Recognising an Emergency Situation

3.1 When not directly advised by the pilot of an emergency situation on board, a Controller may suspect that an aircraft is in an emergency situation when:

a) Radio contact is not established at the time it is expected to be established;

b) Radio contact is lost;

c) A pilot makes a report about the malfunctioning of the aircraft or of unusual behaviour of persons on board;

d) The erratic behaviour of an aircraft or radar blip is observed;

e) The aircraft is overdue at an aerodrome; or

f) The pilot reports that the aircraft is short of fuel.

3.2 If the controller is in radio contact with the aircraft he should ask the pilot if he wishes to declare an emergency and, if not specified by the pilot, the class of emergency being declared.

3.3 More positive indications that an aircraft is in an emergency are described in the following paragraphs.

4 Distress and Urgency Messages

4.1 Pilots have been advised that, in the event of an emergency situation, an ATSU can only provide the necessary priority and handling if the controller is made aware of the emergency by the crew's formal declaration on the RTF. Pilots have also been advised that the extent to which an ATSU will be able to offer assistance will depend on the amount of information provided and on its being transmitted at the earliest opportunity. Furthermore, it is preferable that if pilots believe that they are facing an emergency situation, to declare it as early as possible and cancel it later if they decide that the situation allows.

4.2 There are two classes of emergency message:

a) Distress: A condition of being threatened by serious and/or imminent danger and of requiring immediate assistance; transmitted as MAYDAY, MAYDAY, MAYDAY; or

b) Urgency: A condition concerning the safety of an aircraft or other vehicle, or of some person on board or within sight, but which does not require immediate assistance; transmitted as PAN-PAN, PAN-PAN, PAN-PAN.

4.3 The message will contain as many as possible of the following items:

a) Name of the station addressed (time and circumstances permitting);

b) Identification of the aircraft;

c) Nature of the emergency;

d) Intention of the person in command;

e) Present position, level and heading;

f) Qualification of the pilot e.g. Student, IMC or full instrument rating (urgency messages);

g) As much other information as time permits.

4.4 When a pilot has given certain items of information normally associated with an emergency message but has not prefixed the transmission with 'MAYDAY' or 'PAN', the controller is to ask the pilot if he wishes to declare an emergency. If the pilot declines to do so, the controller may, if he thinks it appropriate, carry out the necessary actions as if the pilot had declared an emergency.

4.5 If a controller considers that another ATSU may be able to give more assistance and, in the circumstances, it is reasonable to do so, the pilot should be asked to change frequency. Pilots should ensure that they prefix the initial message on the new frequency with 'MAYDAY' or 'PAN' to confirm that the emergency situation still exists.

5 Indication on Radar

5.1 Pilots may select the following SSR transponder codes to indicate an emergency situation:- Code 77 (7700) - Aircraft Emergency

Code 76 (7600) - Radio Failure

Code 75 (7500) - Hijack or other act of violence

***Note**: Flight crew may also activate the appropriate emergency and /or urgency capability of ADS or transmit the appropriate emergency message via CPDLC.*

5.2 To indicate an emergency condition pilots are encouraged to select Code 7700 as soon as is practicable after declaring an emergency situation, and having due regard for the overriding importance of controlling aircraft and containing the emergency. However, if the aircraft is already transmitting a discrete code and receiving an air traffic service, that code may be retained at the discretion of either the pilot or the controller.

5.3 During communications between ATSU (air traffic service unit) and aircraft in the event of emergency, Human Factors principles shall be implemented.

6 Emergency Aircraft - Selection of Controlling Unit

6.1 On receipt of information which indicates that an aircraft is in an emergency, the controller must decide whether or not to transfer the aircraft to another ATSU or sector. The choice will depend upon the circumstances and no hard and fast rules apply. The following guidance material may help controllers to make this decision:-

6.2 **Retaining Control**

6.2.1 If the controller can offer immediate assistance the aircraft should normally be retained on the frequency. If necessary impose a radio silence on other aircraft or transfer them to another frequency.

6.2.2 Alternatively it may be more expedient to transfer the emergency aircraft to another frequency, particularly if a radio silence would endanger other traffic.

6.2.3 The aircraft should be retained on the original frequency if it is unreasonable to ask the pilot, or the pilot is not prepared to change frequency. The controller may be able to relay instructions and information from other ATSUs or sectors' to the pilot.

6.3 **Transferring Control**

6.3.1 If a controller considers that another unit or sector may be able to give more assistance that he can himself, and under the circumstances it is reasonable to ask the pilot to change frequency, he shall either:

a) Consult the supervisor or Officer-in-Charge and transfer the aircraft according to his instructions; or

b) Alert the nearest suitable ATSU and transfer the aircraft to a common frequency, giving assistance to that ATSU as required.

6.3.2 Before transferring aircraft, controllers should obtain sufficient information from the pilot to be convinced that the aircraft will receive more assistance from another ATSU. If a change of frequency is desirable the pilot must be instructed to revert immediately if there is no reply on the new frequency. Controllers should continue to listen out on the original frequency until the aircraft is known to be in two-way communication.

6.4 **Intercepted Messages**

6.4.1 If a controller intercepts a message from an aircraft which indicates that it is experiencing an emergency, the controller should, if possible, obtain a VDF bearing and pass it to the ATSU or sector being called and maintain a listening watch on the frequency until the controller is satisfied that two-way communication with the other ATSU or sector has been established.

6.4.2 If it appears that the message is not being acknowledged the controller shall:-

a) Forward the message to the ATSU or sector being called by the most expeditious means;

b) Attempt to establish two-way radio communication with the aircraft; and

c) Render every assistance to the emergency aircraft.

7 Aircraft Emergencies - General Principles

7.1 Controllers shall use every means available to assist the pilot of an aircraft in emergency. Each situation must be dealt with according to the circumstances. The actions described below may be appropriate, but controllers should note that the list is not exhaustive nor in any preferred order.

7.2 Local Emergency Services

7.2.1 Alert local emergency services in the area of the expected forced landing. This should be done via the ACC supervisor unless the aircraft is within the radius of action of the aerodrome fire service.

7.2.2 If it is doubtful that an aircraft can reach an aerodrome, declare the distress phase.
The ACC supervisor must be informed so that he can take alerting action with the ARCC.

7.3 **Nearest Aerodromes**

7.3.1 Advise the pilot of the nearest available aerodromes and suggest a suitable aerodrome for landing. The ACC will be able to assist in the selection.

7.3.2 Notify the aerodrome operator selected for the emergency landing so that suitable preparations can be made.

7.3.3 Warn other aerodromes in the vicinity which is on or close to the trajectory of the emergency aircraft to stand by.

7.4 **Plot Position**

7.4.1 Plot the position of the emergency aircraft and its subsequent track. Radar should be used until the aircraft is out of radar cover.

7.4.2 It may be advisable to plot the position and track on a map. VDF can be used to fix the position by obtaining bearings from other units having the same frequency.

7.4.3 Controllers should always pass position and bearing information about an emergency aircraft to other interested units; particularly the ACC.

7.5 **Uninterrupted Approach**

7.5.1 Ensure that an aircraft in an emergency has an uninterrupted approach to the selected aerodrome; rearrange the traffic pattern if necessary.

7.6 **Emergency Descent**

7.6.1 An aircraft making an emergency descent through other traffic shall be given priority. Controllers shall give all necessary assistance and information and take immediate action to safeguard other aircraft.

7.6.2 When necessary, controllers are to broadcast an emergency message on appropriate frequencies giving instructions to other aircraft during and after the emergency descent.

7.6.3 Immediately after such an emergency broadcast has been made the ACC, approach control unit and aerodrome control tower concerned shall forward further clearances to all aircraft involved as to additional procedures to be followed during and subsequent to the emergency descent. The ATS unit concerned shall additionally inform any other ATSU and control sectors which may be affected.

7.6.4 **Descents by Supersonic Aircraft Due To Solar Cosmic Radiation**

7.6.4.1 Air traffic control units should be prepared for the possibility that supersonic aircraft operating at levels above 15000m (49000ft) may, on rare occasions, experience a rise in solar cosmic radiation which requires them to descent to lower levels, possibly down to below the levels being used by subsonic aircraft. When such a situation is known or suspected, ATSUs should take all possible action to safeguard all aircraft concerned, including any subsonic aircraft affected by the descent.

Note: *All supersonic aircraft in a particular portion of airspace will be affected at the same time and the event may be accompanied by a deterioration or loss of air ground communications. It is expected that the aircraft will alert air traffic control units before the radiation reaches critical level and will request a descent clearance when the critical level is reached. However, situations may occur in which the aircraft will need to descend without waiting for a clearance. In such cases, the aircraft are expected to advise ATSUs, as soon as possible, of the emergency action taken.*

7.7 **Alerting Action**

7.7.1 Normal alerting action will be taken when necessary.

7.8 **Other Aircraft**

7.8.1 Advise other aircraft likely to be affected or able to assist.

7.9 **Aircraft Operator**

7.9.1 When an ATSU decides that an aircraft is in the uncertainty or alert the phase, it shall, when practicable advise an aircraft operator prior to notifying the Rescue Coordination

Centre, except where distress phase is declared, in which case the RCC shall be notified without delay. All information notified to RCC shall, when practicable, be shared with an aircraft operator.

7.9.2 A message received from the operator (e.g. bomb warning, suspected damage to airframe, etc.) should be passed to the commander immediately using the operator's own words.

8 Fuel Jettisoning

8.1 Pilots of aircraft in flight are permitted to jettison fuel in an emergency. The decision to jettison fuel rests entirely with the pilot but may request guidance from air traffic control.

8.2 Controllers should recommend that jettisoning of fuel should be carried out at a height of at least 6000 feet above the surface, preferably in an area designated in the SSI Manual for fuel jettisoning.

8.3 Only in exceptional circumstances when it is unavoidable should fuel be jettisoned at lower altitudes.

8.4 Standard separation shall be applied between the aircraft jettisoning fuel and other aircraft, but no flight should be permitted below the level of the aircraft in the process of jettisoning fuel.

8.5 In some aircraft it may be necessary for an aircraft which is jettisoning fuel to switch off radios. Controllers should endeavour to find out before this happens and obtain an approximate time at which contact shall be re-established.

Chapter 2 Unlawful Interference (Hijack) and Aircraft Bomb Threat

1 Introduction

1.1 Air traffic services personnel shall be prepared to recognise any indication of the occurrence of unlawful interference with an aircraft or a bomb threat.

1.2 Whenever unlawful interference with an aircraft is suspected, and where automatic distinct display of SSR Mode A Code 7500 and Code 7700 is not provided, the radar controller shall attempt to verify any suspicion by setting the SSR decoder to Mode A Code 7500 and thereafter to Code 7700.

Note: *An aircraft equipped with a SSR transponder is expected to operate the transponder on Mode A Code 7500 to indicate specifically that it is the subject of unlawful interference. The aircraft may operate the transponder on Mode A Code 7700, to indicate that it is threatened by grave and imminent danger and requires immediate assistance.*

2 ATS Operations

2.1 General

Whenever unlawful interference with an aircraft is known or suspected, or a bomb threat warning has been received, controllers shall promptly attend to requests by, or to anticipated needs of, the aircraft, including requests for relevant information relating to air navigation facilities, procedures and services along the trajectory and at any aerodrome of intended landing, and shall take such action as is necessary to expedite the conduct of all phases of the flight.

2.2 Procedures to Be Followed By ATSUs or Sectors

a) Transmit, and continue to transmit, information pertinent to the safe conduct of the flight, without expecting a reply from an aircraft;

b) Monitor and plot the progress of the flight with the means that are available, and coordinate transfer of control with adjacent ATS units or sectors without requiring transmissions or other responses from the aircraft, unless communication with the aircraft remains normal;

c) Inform and continue to keep informed, appropriate ATS units and sectors, including those in adjacent FIRs, which may be concerned with the progress of the flight;

Note: *In applying this provision, account must be taken of all the factors which may affect the progress of the flight, including fuel endurance and the possibility of sudden changes in route and destination. The objective is to provide, as far in advance as is practicable in the circumstances, each ATSU or sector with appropriate information as to the expected or possible penetration of the aircraft into its area of responsibility.*

d) When an ATSU knows or believes that an aircraft is subjected to unlawful interference, no reference shall be made in ATS air-ground communication to the nature of the emergency unless it has been referred to in communications from the aircraft involved and it is certain that such reference shall not aggravate the situation.

e) Notification:

i) The operator or its designated representative;

ii) The appropriate rescue co-ordination centre in accordance with appropriate alerting procedures;

iii) The designated security authority;

vi) The appropriate Authority designated by the state.

Note: *It is assumed that the designated security authority and/or the operator will in turn notify other parties concerned in accordance with pre-established procedures.*

v) Relay appropriate messages, relating to the circumstances associated with the unlawful interference, between the aircraft and designated authorities.

2.3 **Procedures For Bomb Threat**

2.3.1 The following additional procedures shall apply if a threat is received indicating that a bomb or other explosive device has been placed on board a known aircraft. The ATS unit receiving the threat information shall:

a) If in direct communication with the aircraft, advise the flight crew without delay of the threat and the circumstances surrounding the threat; or

b) If not in direct communication with aircraft, advise the flight crew by the most expeditious means through other ATS units, sectors or other channels.

2.3.2 The ATSU in communication with the aircraft shall ascertain the intentions of the flight crew and report those intentions to other ATSUs or sectors which may be concerned with the flight.

2.3.3 The aircraft shall be handled in the most expeditious manner whilst ensuring, to the extent possible, the safety of other aircraft and that personnel and ground installations are not put at risk.

2.3.4 Aircraft in flight shall be given a re-clearance to a requested new destination without delay. Any request to climb or descend for the purpose of equalising or reducing the differential between the outside air pressure and cabin air pressure shall be approved as soon as possible.

2.3.5 Controllers shall not provide any advice or suggestions concerning action to be taken by the flight crew in relation to an explosive device.

2.4 **Designated or Isolated Parking Area**

2.4.1 An aircraft on the ground should be advised to remain as far away from other aircraft and installations as possible, and if appropriate, to vacate the runway. The aircraft should be instructed to taxi to a designated or isolated parking area in accordance with the SSI Manual. Should the flight crew disembark passengers and crew immediately, other aircraft, vehicles and personnel should be kept at a safe distance from the threatened aircraft.

2.4.2 An aircraft known or believed to be the subject of unlawful interference or which for other reasons needs isolation from normal aerodrome activities shall be cleared to the designated isolated parking position.

2.4.3 Where such an isolated parking position has not been designated, or if the designated position is not available, the aircraft shall be cleared to a position within the area or areas selected by prior agreement with the aerodrome authority.

2.4.4 The taxi clearance shall specify the taxi route to be followed to the parking position. This route shall be selected with a view to minimise any security risks to the public, other aircraft and installations at the aerodrome.

3 Flight Crew Operations in the Event of Unlawful Interference

3.1 General

The following procedures are intended as guidance for use by aircraft when unlawful interference occurs and the aircraft is unable to notify an ATS unit of this fact.

3.2 Procedures

3.2.1 Unless considerations aboard the aircraft dictate otherwise, the pilot-in-command should attempt to continue flying on the assigned track and at the assigned cruising level at least until able to notify an ATS unit or within radar coverage.

3.2.2 When an aircraft subjected to an act of unlawful interference must depart from its assigned track or its assigned cruising level without being able to make radiotelephony contact with ATS, the pilot- in-command should, whenever possible:

a) Attempt to broadcast warnings on the VHF emergency frequency and other appropriate frequencies, unless considerations aboard the aircraft dictate otherwise. Other equipment such as on-board transponders and data links should also be used when it is advantageous to do so and circumstances permit; and

b) Proceed in accordance with applicable special procedures for in-flight contingencies, where such procedures have been established and promulgated in the Regional Supplementary Procedures (Doc 7030); or

c) If no applicable regional procedures have been established, proceed at a level which differs from the cruising levels normally used for IFR flight by:

1) 500 ft in an area where a vertical separation minimum of 1 000 ft is applied; or

2) 1 000 ft in an area where a vertical separation minimum of 2 000 ft is applied.

Section 9 Emergency Procedures

Chapter 3 Aircraft Lost (Strayed or unidentified aircraft)

1. Introduction

Every possible assistance is to be given to a pilot who reports that he is lost or uncertain of his position. A controller should not be influenced by the fact that any action that he takes may ultimately prove to have been unnecessary.

Note 1: A strayed aircraft is an aircraft which has been strayed significantly from its intended track or which reports that it is lost.

Note 2: An unidentified aircraft is an aircraft which has been observed or reported to be operating in a given area but whose identity has not been established.

2. General

2.1 A flight reporting that it is uncertain of its position or lost, or encountering adverse meteorological conditions, should be considered to be in a state of emergency and handled as such. The controller shall, under such circumstances, communicate in a clear, concise and calm manner and care shall be taken, at this stage, not to question any fault or negligence that the pilot may have committed in the preparation or conduct of the flight. Depending on the circumstances, the pilot should be requested to provide any of the following information considered pertinent so as to better provide assistance:

a) Aircraft flight conditions;

b) Position (if known) and flight level/ altitude;

c) Airspeed and heading since last known position, if pertinent;

d) Pilot experience;

e) Navigation equipment carried and if any navigation aid signals are being received;

f) SSR Mode and code selected if relevant;

g) Departure and destination aerodromes;

h) Number of persons on board;

i) Fuel endurance.

2.2 If communications with the aircraft are weak or distorted, it should be suggested that the aircraft climb to a higher level, provided meteorological conditions and other circumstances permit.

2.3 Navigation assistance to help the pilot determine the aircraft position may be provided by use of radar, VHF direction-finder, navigation aids or sighting by another aircraft. Care must be taken when providing navigation assistance to ensure that the aircraft does not enter cloud.

Note: *The possibility of a flight becoming strayed as a result of encountering adverse meteorological conditions must be recognised.*

2.4 As soon as an ATSU becomes aware of a strayed aircraft it shall take all necessary steps as follows;

2.4.1 When an aircraft's position has been established, the ATSU or sector shall:

a) advise an aircraft of its position and corrective action to be taken; and

b) provide, as necessary other ATSUs and sectors with relevant information concerning the lost or strayed aircraft and any advice given to that aircraft.

2.4.2 When an aircraft's position is not known, the air traffic services unit shall:

a) Attempt to establish two-way communication with the aircraft, unless such communication already exists;

b) use all available means to determine its position;

c) inform other ATSUs 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 circumstances.

d) inform, in accordance with locally agreed procedures, appropriate military units and provide them with pertinent flight plan and other data concerning strayed aircraft;

e) request from the ATSU Unit and Military unit referred to in c) and d) respectively and from other aircraft in flight every assistance in establishing communication with the aircraft and determining its position.

Note: The requirements in d) and e) apply also to ATSU informed in accordance with c)

2.5 The pilot should be provided with reports and information on suitable aerodromes in the vicinity where visual meteorological conditions exist.

3. Radar and VDF

3.1 Radar assistance to **an aircraft** should only be provided upon the request or concurrence of the pilot. The type of radar service to be provided should be agreed upon with the pilot.

3.2 When providing radar assistance in adverse meteorological conditions, the primary objective should be to bring the aircraft into VMC as soon as possible. Caution must be exercised to prevent the aircraft from entering cloud.

3.3 VDF bearings should be used wherever possible, especially from other units to assist in fixing the position of the strayed/ lost aircraft.

4. Terrain Clearance

4.1 If reporting difficulty in maintaining or unable to maintain VMC, the pilot should be informed of the minimum flight altitude of the area where the aircraft is, or is believed to be. If the aircraft is below that level, and the position of the aircraft has been established with a sufficient degree of probability, a track or heading, or a climb, may be suggested to bring the aircraft to a safe level.

5. As soon as an ATSU becomes aware of an unidentified aircraft in its area, it shall attempt to establish the identity of the aircraft whenever this is necessary for the provision of air traffic services or required by the appropriate military authorities in accordance with locally agreed procedures. To this end, the ATSU shall take such of the following steps as are appropriate in the circumstances:

5.1 a) attempt to establish two-way communication with the aircraft;

b) inquire of other ATSU within the flight information region about the flight and request their assistance in establishing two-way communication with the aircraft;

c) inquire of ATSU serving the adjacent flight information regions about the flight and request their assistance in establishing two-way communication with the aircraft;

d) attempt to obtain information from other aircraft in the area.

e) inform the appropriate military unit a soon as the identity of the aircraft has been established.

Section 9 Emergency Procedures

Chapter 4 Loss of Communications (Radio Failure)

1 Introduction

1.1 Radio failure procedure should not be considered in isolation and emergency action described in other chapters should be applied if they are appropriate. For example, if an aircraft fails to make a report when expected, overdue action may have to be taken at the same time, particularly if the aircraft cannot be tracked on radar.

1.2 Radio failure procedures shall be adopted when:

a) An aircraft is observed to have selected SSR Mode A, code 7600, and the pilot does not respond to ATC communication;

b) Communication cannot be maintained with an aircraft on any flight which is being provided with an air traffic control or advisory service;

c) Communication cannot be established with an aircraft operating, or intending to operate, on an IFR flight plan within controlled or advisory airspace.

1.3 The following procedures are based on the assumption that the pilot will comply with the current procedures for radio failure detailed in the SA-AIP.

2 Standard Procedure for Controllers

2.1 After attempts to establish normal two-way radio communication have failed, controllers are to carry out the following standard radio failure procedures:

a) Maintain separation between the radio failure aircraft and other known traffic;

b) Give pertinent information about the movements of the radio failure aircraft to other aircraft in the presumed vicinity;

c) Ask aircraft in the presumed vicinity to establish communication with the radio failure aircraft and relay messages;

d) Use all means possible to monitor the aircraft's progress;

e) Transmit, on the appropriate frequencies:

- Level, route and EAT (or ETA) to which the radio failure aircraft is assumed to be adhering; and

- The weather conditions at the destination aerodrome, a suitable alternate and, if practicable, in areas suitable for a descent through cloud.

f) When, in consultation with the aircraft operator, instructions to divert have been transmitted to the radio failure aircraft, inform the alternate aerodrome and request that they attempt to establish communication;

2.2 The following procedures are based on the assumption that the pilot will comply with the current procedures for radio failure detailed in the SA-AIP.

3 Standard Procedure for Controllers

3.1 After attempts to establish normal two-way radio communication have failed, controllers are to carry out the following standard radio failure procedures:

a) Maintain separation between the radio failure aircraft and other known traffic;

b) Give pertinent information about the movements of the radio failure aircraft to other aircraft in the presumed vicinity;

c) Ask aircraft in the presumed vicinity to establish communication with the radio failure aircraft and relay messages;

d) Use all means possible to monitor the aircraft's progress;

e) Transmit, on the appropriate frequencies:

- Level, route and EAT (or ETA) to which the radio failure aircraft is assumed to be adhering; and

- The weather conditions at the destination aerodrome, a suitable alternate and, if practicable, in areas suitable for a descent through cloud.

f) When, in consultation with the aircraft operator, instructions to divert have been transmitted to the radio failure aircraft, inform the alternate aerodrome and request that they attempt to establish communication;

3 Standard Radio Failure Procedures for Aircraft

3.1 If an aircraft fails to indicate that it is able to receive and acknowledge transmissions, separation shall be maintained between the aircraft having the communication failure and other aircraft, based on the assumption that the aircraft will:

3.1.1 If in visual meteorological conditions:

a) Continue to fly in visual meteorological conditions;

b) Land at the nearest suitable aerodrome; and

c) Report its arrival by the most expeditious means to the appropriate air traffic control unit.

3.1.2 If in instrument meteorological conditions or when conditions are such that it does not appear likely that the pilot will complete the flight in accordance with paragraph 3.1.1:

a) Unless otherwise prescribed on the basis of a regional air navigation agreement, in airspace where radar is not used in the provision of air traffic control, maintain the last assigned speed and level, or minimum flight altitude if higher, for a period of 20 minutes following the aircraft's failure to report its position over a compulsory reporting point and thereafter adjust level and speed in accordance with the filed flight plan; or,

b) In airspace where radar is used in the provision of air traffic control, maintain the last assigned speed and level, or minimum flight altitude if higher, for a period of 7 minutes following:

i) The time the last assigned level or minimum flight altitude is reached; or

ii) The time the transponder is set to Code 7600; or

iii) The aircraft's failure to report its position over a compulsory reporting point; whichever is later and thereafter adjust level and speed in accordance with the filed flight plan;

"*Note: The aircraft will only comply with the above mentioned procedure should it encounter a radio failure on departure while flying within a radar-controlled environment, after having been issued with a non-standard clearance by ATC, due to an interim radar failure, or the departing aircraft not having the relevant serviceable navigational aids on board, for example. Where an aircraft has been issued with a Standard Instrument Departure (SID) and it encounters a radio failure on departure while flying within a radar-controlled environment, it will comply with the communication failure procedure as published on the relevant standard instrument departure chart corresponding to its departure route.* "

c) When being radar vectored or having been directed by ATC to proceed offset using RNAV without a specified limit, proceed in the most direct manner possible to rejoin the current flight plan route no later than the next significant point, taking into consideration the applicable minimum flight altitude;

d) Proceed according to the current flight plan route to the appropriate designated navigation aid or fix serving the destination aerodrome and, when required to ensure compliance with e) below, hold over this aid or fix until commencement of descent;

e) Commence descent from the navigation aid or fix specified in d) at, or as close as possible to, the EAT last received and acknowledged; or, if no EAT has been received and acknowledged, at, or as close as possible to, the ETA calculated from the current flight plan;

f) Complete a normal instrument approach procedure as specified for the designated navigation aid or fix; and

g) Land, if possible, within 30 minutes after the estimated time of arrival specified in e) or the last acknowledged expected approach time, whichever is later.

3.1.3 These procedures shall not apply to aircraft following Standard Instrument Departures (SID) or Standard Terminal Arrival Routes (STAR) where Radio Communication Failure is specified for these procedures.

Section 9 Emergency Procedures

Chapter 5 ATC Contingencies (Radio Communication)

1 Introduction

The procedures outlined below are intended as a general guide to air traffic services personnel. ATC contingencies related to communications, i.e. circumstances preventing a controller from communicating with aircraft under control, may be caused by either a failure of ground radio equipment, a failure of airborne equipment, or by the control frequency being inadvertently blocked by an aircraft transmitter. The duration of such events may be for prolonged periods and appropriate action to ensure that the safety of aircraft is not affected should therefore be taken immediately.

2 Blocked Frequency

2.1 In the event that the control frequency is inadvertently blocked by an aircraft transmitter, the following steps should be taken:

a) Attempt to identify the aircraft concerned;

b) If the aircraft blocking the frequency is identified, attempts should be made to establish communication with that aircraft, e.g. on the emergency frequency 121.5 MHz, by SELCAL, through the aircraft operator’s company frequency if applicable, on any VHF frequency designated for air-to-air use by flight crews or any other communication means or, if the aircraft is on the ground, by direct contact;

c) If communication is established with the aircraft concerned, the flight crew shall be instructed to take immediate action to stop inadvertent transmissions on the affected control frequency.

3 Unauthorised Use of ATC Frequency

3.1 Instances of false and deceptive transmissions on ATC frequencies which may impair the safety of aircraft can occasionally occur. In the event of such occurrences, the ATC unit concerned should:

a) Correct any false or deceptive instructions or clearances which have been transmitted;

b) Advise all aircraft on the affected frequency (-ies) that false and deceptive instructions or clearances are being transmitted;

c) Instruct all aircraft on the affected frequency (-ies) to verify instructions and clearances before taking action to comply;

d) If practical, instruct aircraft to change to another frequency; and

e) If possible, advise all aircraft affected when the false and deceptive instructions or clearances are no longer being transmitted.

3.2 Flights crews shall challenge or verify with the ATC unit concerned any instruction or clearance issued to them which they suspect may be false or deceptive.

3.3 When the transmission of false or deceptive instructions and clearances is detected, the appropriate authority shall take all necessary action to have the transmitter located and the transmission terminated.

Section 9 Emergency Procedures

Chapter 6 Interception of Civil Aircraft

1. Introduction

Each State will normally react according to its own interpretation of the risk being faced. A trigger element could be a single event or a combination of small errors such as;

a) Unauthorised deviation from the cleared flight profile.

b) Loss of radio contact, particularly if associated with a flight profile deviation.

c) Unauthorised SSR Transponder code changes or extended use of the Ident function.

d) Use of non-standard phraseology by the flight deck crew or other actions that could be construed as a covert attempt to alert agencies to a situation on board.

e) Notification of a threat from an official or non-official source.

2 Procedures relating to the interception of civilian aircraft

2.1 As soon as an air traffic services unit learns that an aircraft is being intercepted in its area of responsibility, it shall take such of the following steps as are appropriate in the circumstances.

a) Attempt to establish two-way communication with the intercepted aircraft on any available frequency, including the emergency frequency 121.5 MHz, unless such communication already exists.

b) Inform the pilot of the intercepted aircraft of the interception.

c) Establish contact with the intercept control unit maintaining two-way communication with the intercepting aircraft and provide it with available information concerning the aircraft.

d) Relay messages between the intercepting aircraft or the intercept control unit and the intercepted aircraft, as necessary.

e) In close co-ordination with the intercept control unit take all necessary steps to ensure the safety of the intercepted aircraft; and

f) Inform ATSUs serving adjacent flight information regions if it appears that the aircraft has strayed from such adjacent flight information regions.

2.2 As soon as an ATSU learns that an aircraft is being intercepted outside its area of responsibility, the ATSU shall take the following steps as are appropriate in the circumstances:

a) Inform the ATSU serving the airspace in which the interception is taking place, providing this unit with available information that will assist in identifying the aircraft and requesting it to take action in accordance with paragraph 2.1;

b) Relay messages between the intercepted aircraft and the appropriate ATSU, the intercept control unit or the intercepting aircraft.

Section 9 Emergency Procedures

Chapter 7 Communicable Diseases

1. Introduction:

Article 14 ICAO – Each contracting State agrees to take effective measures to prevent the spread by means
of air navigation of cholera, typhus, smallpox, yellow fever, plague and any other such communicable disease
as the contracting States shall from time to time decide to designate.

2. Procedures

2.1 The pilot in command shall notify ATC as soon as he/she becomes aware of a suspected case of a communicable disease on board his/her aircraft

2.2 The ATSU receiving notification of a suspected case of a communicable disease onboard and aircraft in flight shall advise, as soon as practicable

a. The designated Airport Authority of the next intended landing destination and;

b. The aircraft operator or its designated representative

2.3 Where the destination aerodrome is outside of an ATSU's jurisdiction clear coordination shall be maintained between the ATSU's involved stating the nature of the suspected case of the communicable disease on board the flight and such notification actions conducted by the ATSU's.

2.4 Each ATSU shall maintain a list of contact numbers of the relevant Airport Authorities within their jurisdiction.

Note: It is accepted that the designated Airport Authority and/or the operator will in turn notify other relevant parties concerned in accordance with pre-established procedures as laid down by that Airport Authority.

Section 9 Emergency Procedures

Chapter 8

PROCEDURES RELATED TO EMERGENCIES, COMMUNICATION FAILURE AND CONTINGENCIES

8.1 Introduction

8.1.1 Although all possible contingencies cannot be covered, the procedures below provide for the more frequent cases such as:

a) Inability to comply with assigned clearance due to meteorological conditions, aircraft performance or pressurization failure;

b) En-route diversion across the prevailing traffic flow; and

c) Loss of, or significant reduction in, the required navigation capability when operating in airspace where the navigation performance accuracy is a prerequisite to the safe conduct of flight operations.

With regard to 7 a) and b), the procedures are applicable primarily when descent and/or turn back or diversion is required. The pilot shall take actions as necessary to ensure the safety of the aircraft and the pilot's judgement shall determine the sequence of actions to be taken, having regard to the prevailing circumstances. Air traffic control shall render all possible assistance.

8.2 General procedures

8.2.1 If prior clearance cannot be obtained, and, until such time as a revised clearance is received, the following contingency procedures should be employed and the pilot shall advise air traffic control as soon as practicable, reminding them of the type of aircraft involved and the nature of the problem. In general terms, the aircraft should be flown at a flight level and on an offset track where other aircraft are least likely to be encountered. Specifically, the pilot shall:

a) Leave the assigned route or track by initially turning at least 45 degrees to the right or to the left, in order to acquire a same or opposite direction track offset 15 NM (28 km) from the assigned track centreline. When possible, the direction of the turn should be determined by the position of the aircraft relative to any organized route or track system. Other factors which may affect the direction of the turn are;

1) The direction to an alternate airport;
2) Terrain clearance;
3) Any strategic lateral offset being flown; and
4) The flight levels allocated on adjacent routes or tracks;

b) Having initiated the turn;

1) If unable to maintain the assigned flight level, initially minimize the rate of descent to the extent that is operationally feasible (pilots should take into account the possibility that aircraft below on the same track may be flying a 1 or 2 NM strategic lateral offset procedures, (SLOP)) and select a final altitude which differs from those normally used by 150 m (500 ft) if at or below FL 410, or by 300 m (1 000 ft) if above FL 410; or

2) If able to maintain the assigned flight level, once the aircraft has deviated 19 km (10 NM) from the assigned track centreline, climb or descend to select a flight level which differs from those normally used by 150 m (500 ft), if at or below FL 410, or by 300 m (1 000 ft) if above FL 410;

c) Establish communications with and alert nearby aircraft by broadcasting, at suitable intervals on 121.5 MHz (or, as a backup, on the inter-pilot air-to-air frequency 123.45 MHz) and where appropriate on the frequency in use aircraft identification, flight level, position (including the ATS route designator or the track code, as appropriate) and intentions;

1) Maintain a watch for conflicting traffic both visually and by reference to ACAS (if equipped);
2) Turn on all aircraft exterior lights (commensurate with appropriate operating limitations); and
3) Keep the SSR transponder on at all times;

4) If the intention is to acquire a same direction offset track, the pilot should consider limiting the turn to a 45 degree heading change, in order not to overshoot the offset contingency track; or

d) If the intention is to acquire and maintain an opposite direction offset track, then;

1) Operational limitations on bank angles at cruising altitudes will normally result in overshooting the track to be acquired. In such cases a continuous turn should be extended beyond 180 degrees heading change, in order to re-intercept the offset contingency track as soon as operationally feasible; and
2) Furthermore, if executing such a turn back in a 56 km (30 NM) lateral separation route structure, extreme caution pertaining to opposite direction traffic on adjacent routes must be exercised and any climb or descent, as specified in 15.2.2.3 b) 2), should be completed preferably before approaching within 19 km (10 NM) of any adjacent ATS route.

8.2.2 OTHER ATC CONTINGENCY PROCEDURES

. . .

8.2.2.1 Short-term conflict alert (STCA) procedures

. . .

Local instructions concerning use of the STCA function shall specify, inter alia:
a) The types of flight which are eligible for generation of alerts;
b) The sectors or areas of airspace within which the STCA function is implemented;
c) The method of displaying the STCA to the controller;
d) In general terms, the parameters for generation of alerts as well as alert warning time;
e) The volumes of airspace within which STCA can be selectively inhibited and the conditions under which this will be permitted;
f) Conditions under which specific alerts may be inhibited for individual flights; and
g) Procedures applicable in respect of volume of airspace or flights for which STCA or specific alerts have been inhibited.

8.2.2.2 In the event an STCA is generated in respect of controlled flights, the controller shall without delay assess the situation and, if necessary, take action to ensure that the applicable separation minimum will not be infringed or will be restored.

8.2.2.3 Following the generation of an STCA, controllers should be required to complete an air traffic incident report only in the event that a separation minimum was infringed.

8.2.2.4 The appropriate ATS authority should retain electronic records of all alerts generated. The data and circumstances pertaining to each alert should be analysed to determine whether an alert was justified or not. Non-justified alerts, e.g. when visual separation was applied, should be ignored. A statistical analysis should be made of justified alerts in order to identify possible shortcomings in airspace design and ATC procedures as well as to monitor overall safety levels.

Section 10 Air Traffic Services Messages

Chapter 1 Introduction

1. General

1.1 The unauthorised interception of communications not intended for the general use of the public, or the divulgence of the contents, simple disclosure of the existence, the publication or any use whatever without authorisation, of any communication not intended for the general use of the public is expressly prohibited. (International Telecommunication Union Radio Regulations).

1.2 Any officer who discloses, otherwise than in the discharge of his duties, information acquired in the course thereof or uses for any purpose other than for the discharge of his official duties, information gained or conveyed to him through his connection with the Air Traffic Services, not withstanding that he does not disclose such information, shall be deemed to have been guilty of misconduct and may be dealt with as provided by the law.

2. Origination

2.1 The messages for air traffic services purposes shall be originated as required by the appropriate air traffic service units. Where applicable, the contents of the message shall be based on information furnished by the airspace user.

2.2 When used, routine messages shall be transmitted with standard texts as prescribed.

2.3 When messages are exchanged verbally between the relevant Air Traffic Service Units by land or radio telephone, verbal acknowledgement shall constitute as evidence of receipt of the message, these telephones or ATS/DS which are used for co-ordination are normally recorded.

2.4 When requested by an airspace user, aircraft movement messages originated by an ATSU for ATS purposes shall be addressed to:-

a) One addressee at the point of intended landing or at the point of departure; and

b) Not more than 2 operational control units concerned with the flight.

Note: Such addressees will be specified by the airspace user.

2.5 The responsibility for the origination of messages concerning the movement of aircraft shall rest with the airspace user in respect of movements for which an ATS message is not required, or when the request for the inclusion of the operator's addressees is received after the dispatch of the ATS message.

Section 10 Air Traffic Services Messages

Chapter 2 Composition of Messages

1. General

1.1 All messages intended for transmission on the AFTN must conform to the following standards and shall comprise of the following parts:-

a) Heading;

b) Shortened address if diversion activated use a diversion indicator (VVV); (This part will only be inserted when necessary);

c) Address;

d) Origin;

e) Text;

f) End of message.

1.2 Where an ATSU is responsible for the reception of its own AFTN messages it shall on detection of any missing sequence numbers, mutilated messages or miss-routed messages, advise the transmitting station accordingly.

1.3 The advice should be addressed to “YF” and the following are examples of the texts:-

a) SVC QTA RPT JGA005 (RPT used for mutilated messages).

b) SVC QTA MIS JGA007 (MIS used for missing messages).

c) SVC QTA MSR JGA003 (MSR used for miss-routed messages).

Note: Where several messages are concerned, the message sequence numbers will be expressed as JGA 008-011 (i.e. JGA008 to JGA011 inclusive).

2. Shortened Address and Diversion Indicator

2.1 The shortened address and diversion indicator is intended for Telecom purposes only and is inserted by the Telecommunications Office.

3. Address

3.1 The originator shall be responsible for inserting the appropriate addresses to which the messages is to be sent.

3.2 The address part of the message shall comprise of the following:

a) The appropriate priority indicator; and

b) Addressee(s) indicator(s).

3.3 Addressee indicators shall comprise of:-

a) The ICAO four letter location indicator of the place of destination; and

b) Following immediately on the four letter location indicator, the ICAO two letter abbreviation indicating the Organisation (Civil Aviation Authority, ATNS, Service or Aircraft Operating Agency) Addressed.

c) If it is desired to indicate a responsible department, division or official at the organisation indicated in a) and b), the two letter abbreviation allocated to the Department, Division or Official shall be added immediately after the six letter group.

3.4 The fifth and sixth letters to be used to address aircraft movement messages (FPL, DEP, DLA, ARR, EST, and CHG) to the ATSUs concerned with a flight will be:-

a) ZQZX if the message refers to an IFR flight;

b) ZFZX if the message refers to a VFR flight.

c) In the domestic collective addressing system:-

I. The letters FAZZ replace the first four ICAO letter location indicators;

II. The fifth letter used will be W for TAFS, METARS, SPECIS and SIGMETS while Y is used for management messages.

3.5 Where a message is to be addressed to an organisation that has not been allocated an ICAO two letter abbreviation, the location indicator shall be followed by the letters YY (or the letters YX in the case of a military service/organisation). The name of the addressee organisation shall then be included in the first item of the text of the message.

3.6 Where a message addressed to an aircraft in flight will require handing over the AFTN for part of its routing before re-transmission over the Aeronautical Mobile Service, the location indicator of the Aeronautical Station which is to relay the message to the aircraft shall be followed by the letters ZZZX. The identification of the aircraft shall then be included in the first item of the text of the message.

<u>Example</u>: A message originated at FAJS addressed to SAA501 in flight between FAGG and FACT will be addressed:-

FF FACTZTZX (Text: SAA501 ... etc.)

3.7 A separate 8 letter addressee indicator shall be used for each addressee irrespective of whether they are situated at the same or different locations.

The addressees on any message shall not exceed 7 eight letter addresses.

Note: Consult Station Standing Instruction Manual for specific instructions regarding the addressing of messages intended for more than 7 addressees.

4. Origin

4.1 The originator is responsible for inserting the following components of the origin:-

a) Filing time;

b) Originator indicator.

4.2 The filing time shall comprise a 6-digit date-time group indicating the date and time of filing the message. The first 2 digits indicate the date and the remaining 4 digits the time, based on the 24 hour UTC clock. Zone indicators (e.g. B, Z, etc.) shall not be used.

4.3 The originator indicator shall comprise of:-

a) The ICAO four letter location indicator;

b) Followed immediately by the ICAO two letter abbreviation identifying the organisation (Aeronautical Authority, Service or Aircraft Operating Agency), which originated the message.

c) If it is desired to indicate the specific department, division or official originating the message, the two letter abbreviation allocated to the department, division or official shall be added immediately after the six letter group formed by a) and b).

4.4 Where a message originated by an aircraft in flight requires handling on the AFTN for part of its routing before delivery, the originator indicator shall comprise of the location indicator of the Aeronautical Station responsible for transferring the message to the AFTN, followed immediately by the abbreviation ZZ. The identification of the aircraft shall then be included in the first item of the text of the message.

5. Text

5.1 Messages should whenever possible be compiled in accordance with standard text.

5.2 Messages which do not fall within the categories for which standard texts have been provided and supplementary groups in standard text should be in approved Aeronautical abbreviations and/or Codes whenever possible. Where approved abbreviations and/or code groups will not convey the desired meaning, plain language may be used.

5.3 Words and groups which are not essential, such as expressions of politeness, shall not be used.

5.4 Messages must be legibly written and only the following characters may be used:-

a) Letters: A, B, C, D, etc. to Z

b) Figures: 1 2 3 4 5 6 7 8 9 0

c) Other signs:

/	Oblique stroke
.	Full stop
,	Comma
(…)	open and close brackets
-	hyphen
:	colon

Section 10 Air Traffic Services Messages

Chapter 3 Categories of Messages

1. General

1.1 The messages listed below are authorised for transmission via the aeronautical fixed service (including the aeronautical fixed telecommunication network (AFTN), direct-speech circuits between air traffic services units and computer-computer circuits), or via the aeronautical mobile service, as applicable. They are classified in categories relating to their use by the air traffic services and providing an approximate indication of their importance.

2. Emergency Messages

2.1 This category comprises:-

a) Distress messages and distress traffic, including alerting messages relating to a distress phase (SS);

b) Urgency messages, including alerting messages relating to an alert phase or to an uncertainty phase (SS);

c) Other messages concerning known or suspected emergencies which do not fall under (a) or (b) above, and radio communication failure messages (FF or higher as required).

3. Movement and Control Messages

3.1 This category comprises:-

a) ***Movement*** messages (FF), including:-

I. Filed flight plan messages;
II. Delay messages;
III. Modification messages;
IV. Flight plan cancellation messages;
V. Departure messages;
VI. Arrival messages.

b) Co-ordination messages (FF), including:-

I. Current flight plan messages
II. Estimate messages
III. Co-ordination messages
IV. Acceptance messages
V. Logical acknowledgement messages;

c) Supplementary messages (FF), including:-

I. Request flight plan messages

II. Request supplementary flight plan messages

III. Supplementary flight plan messages;

d) AIDC messages, including:-

I. Notification messages;

II. Coordination messages;

III. Transfer of control messages;

IV. General information messages;

V. Application management messages.

e) ***Control*** messages (FF), including:-

I. Clearance messages

II. Flow control messages

III. Position report and air report messages.

4. Flight Information Messages

4.1 This category comprises:-

a) Messages containing traffic information (FF);

b) Messages containing meteorological information, hazardous surface winds (FF or GG);

c) Messages concerning the operation of aeronautical facilities (GG);

d) Messages containing essential aerodrome information (GG);

e) Messages concerning air traffic incident reports (FF).

4.2 When justified by the requirement for special handling, messages in the fixed service should be assigned the Priority Indicator (DD) in place of the normal Priority Indicator (FF).

5. General Provisions

5.1 The use of expressions such as “originated”, “transmitted”, “addressed” or “received” does not necessarily imply that reference is made to a digital data interchange for a computer-to-computer message. Except where specifically indicated, the messages may also be transmitted by voice, in which case the four terms above represent “initiated”, “spoken by”, “spoken to” and “listened to” respectively.

6. Origination and Addressing of Messages

6.1 Messages for air traffic services purposes shall be originated by the appropriate air traffic service units or by aircraft as specified in Section 3, except that, through special local arrangements, air traffic services units may delegate the responsibility for originating movement messages to the pilot, the operator, or his designated representative.

6.2 Origination of movement, service and flight information messages for purpose other than air traffic services (e.g. operational control) shall, except as provided for in Annex 11, 2.15, be the responsibility of the airspace user.

6.3 Flight plan messages, amendment messages related thereto and flight plan cancellation messages shall, except as provided in Chapter 6 paragraph 8, be addressed only to those air traffic services units which are specified in the provisions of Chapter 6 paragraph 4.3. Such messages shall be made available to other air traffic services units concerned, or to specified positions within such units and to any other addressees of the messages, in accordance with local arrangements.

6.4 When so requested by the operator concerned, emergency and movement messages which are to be transmitted simultaneously to air traffic services units concerned, shall also be addressed to:-

a) One addressee at the destination aerodrome or departure aerodrome, and

b) Not more than two operational control units concerned.

6.5 Such addressees to be specified by the operator or his designated representative.

6.6 When so requested by the operator concerned, movement messages transmitted progressively between air traffic services units concerned and relating to aircraft for which operational control service is provided by that operator shall, so far as practicable, be made available immediately to the operator or his designated representative in accordance with agreed local procedures.

Note: Movement message in this context comprise flight plan messages, departure messages, delay messages, arrival messages, cancellation messages and position report messages and modification messages relevant thereto.

7. Use of the AFTN

7.1 Air traffic services messages transmitted via the AFTN shall contain:-

a) Information in respect of the priority with which it is to transmitted and the addressees to whom it is to be delivered, and an indication of the date and time at which it is filed with the aeronautical fixed station concerned and of the Originator Indicator;

b) The air traffic services data preceded if necessary by the supplementary address information. This data will be transmitted as the text of the AFTN message.

8. Priority Indicator

8.1 This shall consist of the appropriate two-letter Priority Indicator for the message as shown in parentheses for the appropriate category of message in Section 9, Chapter 3, paragraph 3.

Note: It is prescribed in Annex 10 (vol. ii, chapter 4) that the order of priority for the transmission of messages in the AFTN shall be as follows:-

Transmission Priority	**Priority Indicator**	
1	**SS**	
2	**DD**	**FF**
3	**GG**	**KK**

9. Address

9.1 This shall consist of a sequence of Addressee Indicators, one for each addressee to whom the message is to be delivered.

9.2 Each addressee Indicator shall consist of an eight-letter sequence comprising the following order:-

a) The ICAO Location Indicator assigned to the place of destination;

I. The ICAO three letter designator identifying the aeronautical authority, service or aircraft operating agency addressed; or

b) In cases where no designator has been assigned, one of the following:

I. "YXY" in the case where the addressee is a military service/organisation;

II. "ZZZ" in the case where the addressee is an aircraft in flight;

III. "YYY" in all other case;

Note: A list of ICAO three-letter designators is contained in DOC 8585 - Designators for Aircraft Operating Agencies, Aeronautical Authorities and Services.

IV. The letter X; or

V. The one-letter designator identifying the department or division of the organisation addressed.

9.3 The following three-letter designators shall be used when addressing ATS messages to ATS units. Centre in charge of a Flight Information Region or an Upper Flight Information Region (whether ACC or FIC):-

I. If the message is relevant to an IFR flight - ZQZ.

II. If the message is relevant to a VFR flight - ZFZ.

III. Aerodrome Control Tower - ZTZ.

IV. Air Traffic Services Reporting Office - ZPZ.

9.4 Other three-letter designators for ATSUs shall not be used.

10. Filing Time

10.1 The filing time shall consist of a six-digit date-time group indicating the date and the time of filing the message for transmission with the aeronautical fixed station concerned.

11. Originator Indicator

11.1 The originator Indicator shall consist of an eight-letter sequence, similar to an Addressee Indicator, identifying the place of origin and the organisation originating the message.

12 Supplementary Information on the Address and the Origin

12.1 The following supplementary information is required when, in the Indicators of the Address and/or Origin, the three-letter designators "YXY", "ZZZ" or "YYY" (see 4.15 b) are used:-

a) The name of the organisation or the identity; of the aircraft concerned is to appear at the beginning of the text;

b) The order of such insertions is to be the same as the order of the Addressee Indicators and/or the Originator Indicator;

c) Where there is more than one such insertion, the last should be followed by the word “STOP”;

d) Where there are one or more insertions in respect of Addressee Indicators plus an insertion in respect of the Originator Indicator, the word “from” is to appear before that relating to the Originator Indicator.

Section 10 Air Traffic Services Messages

Chapter 4 Emergency Messages

1. Radio Communication Failure Messages (RCF)

1.1 When an ATSU becomes aware that an aircraft which is operating within its area of responsibility is experiencing an apparent radio communication failure, a RCF message will be sent on the AFTN if the ATSU is unable to advise the neighbouring ATSUs or sectors concerned by ATS/DS.

1.2 Priority

DD

1.3 Addressing

a) ATSU at aerodrome of intended landing;

b) All ATSUs within whose FIRs or sectors the flight is planned to operate;

c) To the ATSU responsible for any controlled airspace which the flight will fly through;

d) To the alternate aerodromes nominated in the flight plan;

e) To the ATSU at any aerodrome where the aircraft could effect a landing;

f) To any ATSU which could be of assistance in trying to re-establish communications.

1.4 Filing Time

The date and time of the dispatch of the message to the Telecommunications Office.

1.5 Originator

The eight-letter originator indicator, identifying the ATSU originating the message.

1.6 Text

a) Abbreviation identifying the type of message, preceded by the open bracket sign (RCF;

b) Hyphen sign followed by the a/c RTF call-sign, SSR mode and code;

c) Hyphen sign followed by the time of the last 2 way R/T contact, given in 4 figures;

d) Frequency on which last contact was made;

e) Last reported position;

f) Time at last reported position, in 4 figures;

g) Remaining communication capability if known. Use letters for identifying communication equipment in the flight plan if applicable;

h) Any necessary remarks, using plain language if necessary.

Example: (RCF - SAA314 - 1529 119.5 FAWM 1527 UNK FABLZG to transmit blind that FABL is VMC and ATC expects a/c to land VMC there).

Note: Any information not available is to be shown as "NIL" or "UNK" and not simply omitted.

2. Other Emergency Messages

2.1 This category of messages will include all emergency messages which do not fall under the Alerting of Radio Failure categories.

2.2 This category will also include the messages necessary for the conduct of SAR actions, e.g. Requests for weather information, etc.

2.3 Priority

SS or DD according to circumstances.

2.4 Addressing

To all ATSUs, Met Offices and aircraft operators whom the messages will concern and to FAHQYQQQ.

2.5 Filing Time

The date and time of the dispatch of the message to the Telecommunications Office.

2.6 Originator

The originator indicator identifying the originator of the message.

2.7 Text

Owing to the diverse circumstances which may necessitate the origination of messages in this category, standard text cannot be prescribed. These messages shall be drafted as briefly as possible consistent with clarity, using authorised abbreviations where possible.

Section 10 Air Traffic Services Messages

Chapter 5 Flight Plan Form

1. FLIGHT PLAN FORM AND FLIGHT PLAN MESSAGES

1.1 *Instructions for the completion of the Flight Plan Form*

General

Adhere closely to the prescribed formats and manner of specifying data.

Commence inserting data at item number 7. Where excess space is available leave unused spaces blank. Insert all clock times in 4 figures UTC.

Insert all estimated elapsed times in 4 figures (hours and minutes).

The numbered component parts of the flight plan are known as "items". It will be noted that the flight plan consists of items numbered 3, 7, 8, 9, 10, 13, 15, 16, 18 and 19. These item numbers are not transmitted in flight plan messages and are in fact mainly of significance to authorities using or planning automation.

Shaded area preceding Item 3 - to be completed by ATS and COM services, unless the responsibility for originating flight plan messages has been delegated.

Note - The term "aerodrome" where used in the flight plan is intended to cover also sites other than aerodromes which may be used by certain types of aircraft, e.g. helicopters or balloons.

On all occasions when a pilot files a flight plan, whether the filing of a flight plan for that flight is mandatory or optional, the entire flight plan form, i.e. Items3 to 19 must be filled in, in accordance with these instructions.

The un-shaded portion of the form should be filled in by the pilot or his agent when the flight plan is filed in person. ATC's should assist pilots to fill in their flight plans correctly in order to avoid confusion during, or after the flight.

Instructions for insertion of ATS data Complete

Items7 to 19 as indicated hereunder.

Note - Item numbers on the form are not consecutive, as they correspond to item type numbers in ATS messages.

1.2 *Item3*

1. *Nothing must be added to this group.*

1.3 *Item7-Aircraft Identification (Maximum 7 Characters)*

Aircraft Identification

Insert a single identification, of not more than 7 alphanumeric characters which do not to include hyphens or symbols. This identification shall be one of the following:-

(i) *The 5 letter radio-telephony callsign of the aircraft (e.g. ZSCAA) if this callsign alone will be used to identify the aircraft in radio-telephony during flight;*

OR

(ii) *the ICAO designator for the aircraft operating agency followed by the last 3 letters of the radio- telephony callsign of the aircraft, (e.g. CAWEJK indicates Comair's aircraft ZSEJK) if the airline's radio-telephony callsign followed by the aircraft's registration (e.g. Comair Echo Juliet Kilo) will be used to identify the aircraft in radio-telephony during flight;*

OR

(iii) *The ICAO designator for the aircraft operating agency followed by the flight identification number (e.g. CAW805 indicates Comair's schedule flight number 805) if the airline's radio-telephony callsign followed by the flight number (e.g. Comair 805) will be used to identify the aircraft in radio-telephony during flight;*

OR

(iv) *the aircraft type designator (as given in ICAO Doc 8643) followed by the last 3 letters of the aircraft's registration; (e.g. BE55DCH indicates Beech Baron ZS-DCH) if the aircraft type followed by its registration letters (Baron Delta Charlie Hotel) will be used to identify the aircraft in radio- telephony during flight;*

OR

(v) *in respect of internal flights only, irregular callsigns such as "Blue Formation", "Cheetah 3" and company callsigns for which 3 letter abbreviations have not been allocated. e.g. Rodair CUC, will be entered as ZZZZ in item7 and in item18 as RMK/ Blue- Formation or Rodair-CUC.*

Note -Provisions for the use of radio-telephony call signs are contained in Annex 10, Volume 2, Chapter 5. ICAO designators and telephony designators for aircraft operating agencies are contained in DOC 8585 - Designators for Aircraft Operating Agencies, Aeronautical Authorities and Services.

1.4 *Item8-Flight Rules and Type of Flight (two characters)*

The explanation of the provision related to indicating flight rules has been clarified. It has also been clarified that it must be specified in Item 15 (Route) the point or points at which a change in flight rules is planned. Additional text has been added to highlight that the status of the flight is to be denoted in Item 18 following the Status (STS) indicator, using one of the defined descriptors, or that other reasons for specific handling by ATS are to be denoted in Item 18 following the Remark (RMK) indicator. No other changes have been made to the provision.

Flight Rules

Insert one of the following letters to denote the category of flight rules with which the pilot intends to comply:

I if it is intended that the entire flight will be operated under the IFR V if it is intended that the entire flight will be operated under the VFR

Y if the flight initially will be operated under IFR, followed by one or more subsequent changes of flight rules or

Z if the flight initially will be operated under the VFR, followed by one or more subsequent changes of flight rules Specify in Item 15 the point or points at which a change of flight rules is planned.

Type of Flight

Immediately after the Flight Rules letter insert one of the following letters to denote the type of flight:- S if

Scheduled Air Transport;
N if Non-scheduled Air Transport;

G if General Aviation;
M if Military;

X if other than any of the defined Categories above.

VIP status flights are no longer stated in flight plans except for flights with head of state status indicated by an "X" in this item and STS/HEAD in item 18.

1.5 *Item9-Number and Type of Aircraft and Wake Turbulence Category*

Number of Aircraft (1 or 2 characters)

Insert the number of aircraft, if more than one. Type

of Aircraft (2 to 4 characters)

Insert the appropriate designator as specified in ICAO Doc 8643, Aircraft Type Designators, OR

if no such designator has been assigned, or in case of formation flights comprising more than one type, Insert

ZZZZ, and SPECIFY in Item18, the numbers and type(s) of aircraft preceded by TYP/.

Wake Turbulence Category (1 character)

Insert an oblique stroke followed by one of the following letters to indicate the wake turbulence category of the aircraft:

J- SUPER (A380- 800 type aircraft)

H - HEAVY, to indicate an aircraft type with a maximum certificated take-off mass of 136 000 kg or more;

M - MEDIUM, to indicate an aircraft type with a maximum certificated take-off mass of less than 136 000 kg but more than 7 000 kg;

L - LIGHT, to indicate an aircraft type with a maximum certificated take-off mass of 7 000 kg or less.

1.6 *Item10-Equipment and Capabilities*

Numerous changes have been made to this provision. It is important to note that Item 10 now also indicates capabilities, which consists of three elements: presence of relevant serviceable equipment on board the aircraft; equipment and capabilities commensurate with crew qualifications; and, where applicable, authorization from the appropriate authority.

The following provisions are applicable to –

Item 10a (Radio communication, navigation and approach aid equipment and capabilities):

Insert N if no Com/Nav Approach aid equipment for the route to be flown is carried, or the equipment is U/S,

S if Standard Com/Nav/Approach equipment for the route to be flown is carried and serviceable. Standard equipment includes VHF RTF, VOR, ILS and NO longer includes ADF (See Note 1),

AND/OR

Insert one or more of the following letters to indicate the Com/Nav/Approach aid equipment available and serviceable:

A *GBAS landing system*
B *LPV (APV with SBAS)*
C *Loran C*
D *DME*
E1 FMC WPR ACARS
E2 D-FIS ACARS

E3 PDC ACARS
F *ADF*
G *GNSS (See Note 2)*
H HF RTF
I *Inertial Navigation*
J1 CPDLC ATN VDL Mode 2(See Note 3)
J2 CPDLC FANS 1/A HFDL
J3 CPDLC FANS 1/A VDL Mode 4
J4 CPDLC FANS 1/A VDL Mode 2
J5 CPDLC FANS 1/A SATCOM (INMARSAT) J6 CPDLC FANS 1/A SATCOM (MTSAT)
J7 CPDLC FANS 1/A SATCOM (Iridium)
K *MLS*
L *ILS*
M1 ATC RTF SATCOM (INMARSAT)
M2 ATC RTF (MTSAT)
M3 ATC RTF (Iridium) O
VOR
P1–P9 Reserved for RCP
R *PBN approved (see Note 4)*
T *TACAN*
U *UHF RTF*
V *VHF RTF*
W *RVSM approved*
X *MNPS approved*
Y *VHF with 8.33 kHz channel spacing capability*
Z *Other equipment carried or other capabilities (see Note 5) Any*

alphanumeric characters not indicated above are reserved.

Note 1 - If the letter S is used, standard equipment is considered to be VHF RTF, VOR and ILS, unless another combination is prescribed by the appropriate ATS Authority.

Note 2 - If the letter G is used, the types of external GNSS augmentation, if any, are specified in Item 18 following the indicator NAV/ and separated by a space.

Note 3 - See RTCA/EUROCAE Interoperability Requirements Standard For ATN Baseline 1 (ATN B1 INTEROP Standard – DO-280B/ED-110B) for data link services air traffic control clearance and information/air traffic control communications management/air traffic control microphone check (refer to www.eurocontrol.int for further information).

Note 4 - If the letter R is used, the performance based navigation levels that can be met are specified in Item 18 following the indicator PBN/. Guidance material on the application of performance based navigation to a specific route segment, route or area is contained in the Performance- Based Navigation Manual (Doc 9613).

Note:5- If the letter Z is used, specify in Item 18 the other equipment carried or other capabilities, preceded *by COM/ , NAV/ and/or DAT, as appropriate.*

Note 6- Information on navigation capability is provided to ATC for clearance and routing purposes. The following provisions are applicable to:–

Item 10b - Surveillance Equipment and Capabilities

Insert one or two of the following letters to describe the serviceable surveillance equipment carried: SSR Equipment

INSERTN if no surveillance equipment for the route to be flown is carried, or the equipment is unserviceable,

OR

INSERTone or more of the following descriptors, to a maximum of 20 characters, to describe the serviceable surveillance equipment and/or capabilities on board:

SSR Modes A and C

ADS-C

D1 ADS-C with FANS 1/A capabilities G1
ADS-C with ATN capabilities

Alphanumeric characters not indicated above are reserved.
Example: ADE3RV/HB2U2V2G1

Note - Additional surveillance application should be listed in Item 18 following Transponder - Mode A (4 digits- 4096 Codes)

C Transponder - Mode A (4 digits — 4 096 codes) and Mode & C

SSR Mode S

- *E Transponder - Mode S, including aircraft identification, pressure-altitude and extended squitter (ADS-B) capability*
- *H Transponder -Mode S, including aircraft identification, pressure-altitude and enhanced surveillance capability*
- *I Transponder - Mode S, including ACFT identification, but no pressure - altitude capability*
- *L Transponder - Mode S, including aircraft identification, pressure-altitude, extended squitter (ADS- B) and enhanced surveillance capability*
- *P Transponder - Mode S including pressure altitude, but no ACFT identification capability*
- ***S*** *Transponder - Mode S, including both pressure - altitude and ACFT identification capability*
- *X Transponder - Mode S with neither ACFT identification nor pressure – altitude capability*

Note - Enhanced surveillance capability is the ability of the aircraft to down-link aircraft derived data via a Mode S transponder.

ADS-B

B1 ADS-B with dedicated 1090 MHz ADS-B "out" capability
B2 ADS-B with dedicated 1090 MHz ADS-B "out" and "in" capability U1 ADS-B "out" capability using UAT
U2 ADS-B "out" and "in" capability using UAT V1
ADS-B "out" capability using VDL Mode 4
V2 ADS-B "out" and "in" capability using VDL Mode 4owing the indicator SUR/ .

1.7 *Item13 -Departure Aerodrome and Time (8 characters)*

Some clarifications have been made and additional provisions included regarding how to indicate departure *aerodromes which have not been assigned an ICAO four-letter designator.*

The following provisions are applicable to Item 13:

Insert the ICAO four-letter location indicator of the departure aerodrome as specified in Doc 7910, Location Indicators,

OR,

if no location indicator has been assigned,

Insert ZZZZ and SPECIFY, in item18, the name and co-ordinates of the aerodrome preceded by DEP/

OR,

the first point of the route or the marker radio beacon preceded by DEP/…, if the aircraft has not taken off from the aerodrome,

if the flight plan is received from an aircraft in flight,

Insert AFIL, and SPECIFY, in item18 , the ICAO four-letter location indicator of the location of the ATSU from which supplementary flight plan data can be obtained; preceded by DEP/

THEN, WITHOUT A SPACE,

Insert for a flight plan submitted before departure, the estimated off-block time (EOBT),

OR

for a flight plan received from an aircraft in flight, the actual or estimated time over the first point of the route to which the flight plan applies.

1.8 *Item15 – Route*

Item 15c Route (including changes of speed, level and/or flight rules) – an editorial change has been made to clarify that it is possible to indicate, at a single point, where it is planned that a change of speed or level or both is planned to commence, or a change of ATS route and/or a change of flight rules.

The provision has been expanded to include the possibility of describing a significant point in the route as a bearing or distance from a "reference point", rather than only from a navigational aid, as detailed on 1.8.2. below.

Insert the first cruising speed as in (a) and the first cruising level as in (b), without a space between them.

Then, follow the arrow, INSERT the route description as in (c).

(a) *Cruising Speed (maximum 5 characters)*

Insert the True Air Speed for the first or the whole cruising portion of the flight, in terms of: Knots,

expressed as N followed by 4 figures (e.g. N0485),

OR

Mach number, to the nearest hundredth of unit Mach, expressed as M followed by 3 figures (e.g. M082).

(b) *Cruising Level (maximum 5 characters)*

Insert the planned cruising level for the first or the whole portion of the route to be flown, in terms of: Flight level, expressed as F followed by 3 figures (e.g. F085; F330),

OR

Altitude in hundreds of feet, expressed as A followed by 3 figures (e.g. A045; A100),

OR

for uncontrolled VFR flights, the letters VFR.

(c) *Route (including changes of speed, level and/or Flight Rules)*

Flights along designated ATS routes

Insert if the departure aerodrome is located on, or connected to, the ATS route, the designator of the first ATS route,

OR

if the departure aerodrome is not on, or connected to, the ATS route, the letters DCT followed by the point of joining the first ATS route, followed by the designator of the ATS route.

Insert each point at which either a change of speed and/or level is planned to commence, or a change of ATS route, and/or a change of flight rules is planned, followed in each case by the designator of the next ATS route segment, even if the same as the previous one.

Note - When a transition is planned between a lower and upper ATS route and the routes are orientated in the same direction, the point of transition need not be inserted.

OR

by DCT, if the flight to the next point will be outside a designated route, unless both points are defined by geographical co-ordinates.

Flights outside designated ATS routes

Insert points normally not more than 30 minutes flying time or 200nm apart, including each point at which a change of speed or level, a change of track, or a change of flight rules is planned

OR

define the track of flights operating predominantly in an east-west direction between 700N and 700S by reference to significant points formed by the intersections of half or whole degrees of latitude with meridians spaced at intervals of 10 degrees of longitude. For flights operating in areas outside those latitudes the tracks shall be defined by significant points formed by the intersection of parallels of latitude with meridians normally spaced at 20 degrees of longitude. The distance between significant points shall, as far as possible, not exceed one hour's flight time. Additional significant points shall be established as deemed necessary.

For flights operating predominantly in a north-south direction define tracks by reference to significant points formed by the intersection of whole degrees of longitude with specified parallels of latitude which *are spaced at 5 degrees.*

When over oceans and deserts where no references are available, use LAT/LONG as above. When over land use a town within 10nm of the aircraft track.

Insert DCT between successive points unless both points are defined by geographical co-ordinates or by bearing and distance.

Use only the conventions in (1) to (5) below and SEPARATE each sub-item by a space.

1.8.1 ATS ROUTE (2 TO 7 CHARACTERS)

The coded designator assigned to the route or route segment including, where appropriate, the coded designator assigned to the standard departure or arrival route (e.g. W88, UW81, UW95).

Note: Provisions for the application of route designators are contained in Annex 11 appendix 1, whilst guidance material on the application of an RNP type to a specific route segment, route or area, is contained in the Manual on Required Navigation Performance (RNP) (Doc 9613).

1.8.2. SIGNIFICANT POINT (2 TO 11 CHARACTERS)

The coded designator (2 to 5 characters) assigned to the point (e.g. JS, JSV, ORNAD, FAWB)

OR

if no coded designator has been assigned, one of the following ways:
Degrees only (7 characters):

2 figures describing latitude in degrees, followed by "N" (North) or "S" (South), followed by 3 figures describing longitude in degrees, followed by "E" (East) or "W" (West). Make up the correct number of figures, where necessary, by insertion of zeros, e.g. 46N078W.

Degrees and minutes (11 characters):

4 figures describing latitude in degrees and tens and units of minutes followed by "N" (North) or "S" (South), followed by 5 figures describing longitude in degrees and units of minutes, followed by "E" (East) or "W" (West). Make up the correct number of figures, where necessary, by insertion of zeros, e.g., 4620N07805W.

Bearing and distance from a reference point:

The identification of the reference point, followed by a bearing from the point in the form of 3 figures giving degrees magnetic, THEN the distance from the point in the form of 3 figures expressing nautical miles. In areas of high latitude where it is determined by the appropriate authority that reference to degrees magnetic is impractical, degrees true may be used. Make up the correct number of figures, where necessary, by insertion of zeros - e.g. a point 1800 magnetic at a distance of 40 nautical miles from VOR "DUB" should be expressed as DUB180040.

1.8.3. CHANGE OF SPEED OR LEVEL (MAXIMUM 21 CHARACTERS)

The point at which a change of speed (5% TAS or 0.01 Mach or more) or a change of level is planned to commence, expressed exactly as in (2) above, followed by an oblique stroke and both the cruising speed and the cruising level, expressed exactly as in 1.8(a) and 1.8(b) above, without a space between them, even when only one of these quantities will be changed.

Examples: JS/N0284A045
JSV/N0305F180

1.8.4 CHANGE OF FLIGHT RULES (MAXIMUM 3 CHARACTERS)

The point at which the change of flight rules is planned, expressed exactly as in (2) and (3) above as appropriate, followed by a space and one of the following:

VFR if from IFR to VFR IFR
if from VFR to IFR

Examples: JS VFR
JS/N0180F110 IFR

1.8.5 *CRUISE CLIMB (MAXIMUM 28 CHARACTERS)*
The letter C followed by an oblique stroke; THEN the point at which cruise climb is planned to start, expressed exactly as in (2) above followed by an oblique stroke; THEN the speed to be maintained during cruise climb, expressed exactly as in 1.8(a) above, followed by the two levels defining the layer to be occupied during cruise climb, each level expressed exactly as in 1.8(b) above, or the level above which cruise climb is planned followed by the letters PLUS, without a space between them.

Examples: C/30S024E/N0480F290F350
C/30S024E/N0480F290PLUS

1.9 *Item 16 - Destination Aerodrome and Total Estimated Elapsed Time, Alternate Aerodrome(s)*

The "alternate aerodrome(s)" being referred to is (are) the destination alternate aerodrome(s). Destination Aerodrome and Total Estimated Elapsed Time (8 characters)

Insert the ICAO four-letter location indicator of the destination aerodrome as specified in Doc7910, Location Indicators, followed (without a space) by the total estimated elapsed time,

OR

if no location indicator has been assigned

Insert ZZZZ followed, without a space, by the total estimated elapsed time, and SPECIFY in Item 18 the name and location of the aerodrome, preceded by DEST/ .

Note - For a flight plan received from an aircraft in flight, the total estimated elapsed time is the estimated time from the first point of the route to which the flight plan applies to the termination of the flight plan.

DESTINATION ALTERNATE AERODROME(S) (4 CHARACTERS)

Insert the ICAO four-letter indicator(s) of not more than two destination alternate aerodromes, as specified in Doc 7910, Location Indicators, separated by a space,

OR

if no location indicator has been assigned to the destination alternate aerodrome(s),

Insert ZZZZ and SPECIFY in item 18 the name and location of the destination alternate aerodrome(s), preceded by ALTN/.

1.10 *Item 18 - Other Information*

Operators are warned that the use of indicators not included in the provisions may result in data being rejected, processed incorrectly or lost.

The provision has been clarified to indicate that hyphens "-" or oblique strokes "/" should only be used as described.

Operators are strongly encouraged to always include the Date of Flight (DOF) in Item 18 of the flight plan. It is mandatory to include DOF if the flight plan is filed more than 24 hours in advance of the EOBT.

The provision has been amended such that only indicators described in the provisions may be used, and they must be inserted in the order shown below.
The indicators defined are as follows, and are listed in the order in which they are to be inserted, if used: Insert

0 (zero) if no other information,

OR

any other necessary information in the sequence shown hereunder, in the form of the appropriate indicator followed by an oblique stroke and the information to be recorded:

STS/ *Reason for special handling by ATS, e.g. hospital aircraft, search and rescue mission, as follows: ALTRV:*

for a flight operated in accordance with an altitude reservation;
ATFMX: *for a flight approved for exemption from ATFM measures by the appropriate ATS authority; FFR:*
fire-fighting;
FLTCK: *flight check for calibration of navaids;*
HAZMAT: *for a flight carrying hazardous material;*
HEAD: *a flight with Head of State status;*
HOSP: *for a medical flight declared by medical authorities; HUM:*
for a flight operating on a humanitarian mission;
MARSA: *for a flight for which a military entity assumes responsibility for separation of military aircraft;*
MEDEVAC: *for a life critical medical emergency evacuation;*
NONRVSM: *for a non-RVSM capable flight intending to operate in RVSM airspace; SAR:*
for a flight engaged in a search and rescue mission; and
STATE: *for a flight engaged in military, customs or police services.*
Other reasons for special handling by ATS shall be denoted under the designator RMK/.

PBN/ *Indication of RNAV and/or RNP capabilities. Include as many of the descriptors below, as apply to the flight, up to a maximum of 8 entries, i.e. a total of not more than 16 characters.*

	RNAV SPECIFICATIONS
A1	*RNAV 10 (RNP 10)*
B1	*RNAV 5 all permitted sensors*
B2	*RNAV 5 GNSS*
B3	*RNAV 5 DME/DME*

B4	*RNAV 5 VOR/DME*
B6	*RNAV 5 LORANC*
C1	*RNAV 2 all permitted sensors*
C2	*RNAV 2 GNSS*
C3	*RNAV 2 DME/DME*
C4	*RNAV 2 DME/DME/IRU*
D1	*RNAV 1 all permitted sensors*
D2	*RNAV 1 GNSS*
D3	*RNAV 1 DME/DME*
D4	*RNAV 1 DME/DME/IRU*
	RNP SPECIFICATIONS
L1	*RNP 4*
O1	*Basic RNP 1 all permitted sensors*
O2	*Basic RNP 1 GNSS*
O3	*Basic RNP 1 DME/DME*
O4	*Basic RNP 1 DME/DME/IRU*
S1	*RNP APCH*
S2	*RNP APCH with BARO-VNAV*
T1	*RNP AR APCH with RF (special authorization required)*
T2	*RNP AR APCH without RF (special authorization required)*

Combinations of alphanumeric characters not indicated above are reserved.

NAV/ Indicate navigation equipment and capabilities, other than those specified in Item 10 a) or PBN/, as required by the appropriate ATS authority. In the case of GNSS augmentation, when necessary to specify it, include 'GBAS' and/or 'SBAS' as appropriate.

COM/ Indicate communications applications or capabilities not specified in Item 10 a) as required by the appropriate ATS authority.

DAT/ Indicate data applications or capabilities not specified in 10 a), as required by the appropriate ATS authority. In the case of required surveillance performance, when necessary to specify it, include the letters "RSP" followed by the appropriate performance level, such as RSP180.

SUR/ Include surveillance applications or capabilities not specified in Item 10 b), as required by the appropriate ATS authority.

DEP/ Name and location of departure aerodrome, if ZZZZ is inserted in item 13, or the ICAO four-letter location indicator of the location of the ATSU from which supplementary flight plan data can be obtained, if AFIL is inserted in Item 13. For aerodromes not listed in the relevant Aeronautical Information Publication, indicate location as follows:

With 4 figures describing latitude in degrees and tens and units of minutes followed by "N" (North) or "S" (South), followed by 5 figures describing longitude in degrees and tens and units of minutes, followed by "E" (East) or "W" (West). Make up the correct number of figures, where necessary, by insertion of zeros, e.g. 4620N07805W (11 characters).

OR,

Bearing and distance from the nearest significant point, as follows:

The identification of the significant point followed by the bearing from the point in the form of 3 figures giving degrees magnetic, followed by the distance from the point in the form of 3 figures expressing nautical miles. In areas of high latitude where it is determined by the appropriate authority that reference to degrees magnetic is impractical, degrees true may be used. Make up the correct number of figures, where necessary, by insertion of zeros, e.g. a point of 180° magnetic at a distance of 40 nautical miles from VOR "DUB" should be expressed as DUB180040.

OR,

The first point of the route (name or LAT/LONG) or the marker radio beacon, if the aircraft has not taken off from an aerodrome.

DEST/ Name and location of destination aerodrome, if ZZZZ is inserted in item 16. For aerodromes not listed in the relevant Aeronautical Information Publication, indicate location in LAT/LONG or bearing and distance from the nearest significant point, as described under DEP/ above.

DOF/ The date of flight departure in a six figure format (YYMMDD, where YY equals the year, MM equals the month and DD equals the day).

REG/ The nationality or common mark and registration markings of the aircraft, if different from the aircraft identification in item 7.

EET/ Significant points or FIR boundary designators and accumulated estimated elapsed times from take-off to such points or FIR boundaries, when so prescribed on the basis of regional air navigation agreements, or by the appropriate ATS authority.
Examples: EET/CAP0745 XYZ0830
EET/EINN0204

SEL/ SELCAL Code, for aircraft so equipped.

TYP/ Type(s) of aircraft, proceeded if necessary without a space by number(s) of aircraft and separated by one space, if ZZZZ is inserted in item 9.
Example: TYP/2F15 5F5 3B2

CODE/ Aircraft address (expressed in the form of an alphanumerical code of six hexadecimal characters) when required by the appropriate ATS authority. Example: "F00001" is the lowest aircraft address contained in the specific block administered by ICAO.

RVR/ The minimum RVR requirement of the flight.

Note - This provision is detailed in the European Regional Supplementary Procedures (EUR SUPPs, Doc 7030), Chapter 2.

DLE/ Enroute delay or holding, insert the significant point(s) on the route where a delay is planned to occur, followed by the length of delay using four figure time in hours and minutes (hhmm).
Example: DLE/MDG0030

OPR/ ATNS Account number and if no account number available the ICAO designator or name, postal address, telephone and Fax numbers of the aircraft operating agency must be indicated, if different from aircraft identification in Item 7.

ORGN/ The originator's 8 letter AFTN address or other appropriate contact details, in cases where the originator of the flight plan may not be readily identified, as required by the appropriate ATS authority.

Note - In some areas, flight plan reception centres may insert the ORGN/ identifier and originator's AFTN address automatically.

PER/ Aircraft performance data, indicated by a single letter as specified in the Procedures for Air Navigation Services - Aircraft Operations (PANS-OPS, Doc 8168), Volume I - Flight Procedures, if so prescribed by the appropriate ATS authority.

ALTN/ Name and co-ordinates of destination alternate aerodrome(s) if ZZZZ is inserted in item 16. For aerodromes not listed in the relevant Aeronautical Information Publication, indicate location in LAT/LONG or bearing and distance from the nearest significant point, as described in DEP/ above.

RALT/ ICAO four letter indicator(s) for en-route alternate(s), as specified in Doc 7910, Location Indicators, or name(s) of en-route alternate aerodrome(s), if no indicator is allocated. For aerodromes not listed in the relevant Aeronautical Information Publication, indicate location in LAT/LONG or bearing and distance from the nearest significant point, as described in DEP/ above.

TALT/ ICAO four letter indicator(s) for take-off alternate, as specified in Doc 7910, Location Indicators, or name of take-off alternate aerodrome, if no indicator is allocated. For aerodromes not listed in the relevant Aeronautical Information Publication, indicate location in LAT/LONG or bearing and distance from the nearest significant point, as described in DEP/ above.

RIF/ The route details to the revised destination aerodrome, followed by the ICAO 4 letter designator of the aerodrome. The revised route is subject to reclearance in flight.

RMK/ Any other plain language remarks when required by the appropriate ATS authority or deemed necessary.

RFP/ Q followed by a digit to indicate the sequence of the replacement flight plan being submitted.

Note - This provision is detailed in the European Regional Supplementary Procedures (EUR SUPPs, Doc 7030), Chapter 2.

1.11 *Item 19 -Supplementary Information*

ENDURANCE

After E/ Insert a 4-figure group giving the fuel endurance in hours and minutes. PERSONS

ON BOARD

After P/ Insert the total number of persons (passengers and crew) on board. Insert TBN (to be notified) if the total number of persons is not known at the time of filing.

EMERGENCY AND SURVIVAL EQUIPMENT

R/ (RADIO) CROSS OUT "U" if UHF on frequency 243.0 MHz is not available. CROSS OUT "V" if VHF on frequency 121.5 MHz is not available. CROSS OUT "E" if emergency location beacon - aircraft (ELBA) is not available.

S/ (SURVIVAL EQUIPMENT) CROSS OUT all indicators if survival equipment is not carried. CROSS OUT P if polar survival equipment is not carried. CROSS OUT D if desert survival equipment is not carried. CROSS OUT M if maritime survival equipment is not carried. CROSS OUT J if jungle survival equipment is not carried.

J/ (JACKETS) CROSS OUT all indicators if life jackets are not carried. CROSS OUT L if life jackets are not equipped with lights. CROSS OUT F if life jackets are not equipped with fluorescein. CROSS OUT U or V or both as in R/ above to indicate radio capability of jackets, if any.

D/	*(DINGHIES NUMBER)*	*CROSS OUT indicators D and C if no dinghies are carried, or INSERT number of dinghies carried; and* -
	(CAPACITY)	*Insert total capacity, in persons, of all dinghies carried; and*
	(COVER)	*CROSS OUT indicator C if dinghies are not covered; and*
	(COLOUR)	*Insert colour of dinghies if carried.*
A/	*(AIRCRAFT COLOUR AND MARKINGS)*	*Insert colour of aircraft and significant markings.*
N/	*(REMARKS)*	*CROSS OUT indicator N if no remarks, or INDICATE any other survival equipment carried and any other remarks regarding survival equipment.*
C/	*(PILOT)*	*Insert name and initial of pilot-in-command.*

1.11.2 **Filed by**

Insert the name of the unit, agency or person filing the flight plan.

Signature

Signature of representative of one of the above.

Method Filed

The abbreviation ‘Phone’ or ‘R/T’ must be inserted when the flight plan is filed by telephone or R/T respectively.

FLIGHT PLAN

REPUBLIC OF SOUTH AFRICA **VLUGPLAN** REPUBLIEK VAN SUID-AFRIKA

Priority / Prioriteit — Addressee(s) / Geadresseerde(s)

«≡ FF →

«≡

Filing Time / Tyd van indiening — Originator / Opsteller

→ «≡

Specific identification of address(s) and/or originator
Spesifieke identifikasies van geadresseerde(s) en/of opsteller

3 Message type / Tipe boodskap — 7 Aircraft identification / Lugvaart identifikasie — 8 Flight rules / Vliegreëls — Type of flight / Tipe vlug

«≡ **(FPL** - - «≡

9 Number / Nommer — Type of aircraft / Tipe lugvaartuig — Wake turbulence cat / Volgstroomklas — 10 Equipment / Toerusting

- - «≡

13 Departure aerodrome / Vertrek vliegveld — Time / Tyd

- «≡

15 Cruising speed / Kruisspoed — Level / Vlak — Route / Roete

- →

«≡

16 Destination aerodrome / Bestemmingsvliegveld — Hr Min — Altn aerodrome / Uitwykvliegveld — 2nd altn aerodrome / 2de uitwykvliegveld

- → → «≡

18 Other information / Ander inligting

-

«≡

Supplementary information (not to be transmitted in FPL messages)
Aanvullende inligting (moet nie in FPL boodskap oorgesein word nie)

19 Endurance / Brandstofduur — Persons on board / Persone aan boord — Emergency radio / Noodradio

Hr Min. — UHF VHF Elba

-E/ → P / → R / U V E

Survival equipment/Oorlewingstoerusting — Jackets/Reddingsbaadjies

Polar / Pool — Desert / Woestyn — Maritime / Maritieme — Jungle / Oerwoud — Light / Lig — Floures / Floures — UHF — VHF

→ S / P D J → J L F U V

Dinghies/Reddingsboot

Number / Nommer — Capacity / Vermoë — Cover / Oortreksel — Colour / Kleur

→ / → → C → «≡

Aircraft colour and markings
Lugvaartuig kleur en merktekens

A /

Remarks
Opmerkings

→ / «≡

Pilot in command
Gesagsvoerder

C/) «≡

Files by/Ingedien deur

Space reserved for additional requirements
Spasie voorbehou vir addisionele besonderhede

Section 10 Air Traffic Services Messages

Chapter 6 Flight Plan Messages

1 Flight Plan Messages

1.1 Priority

FF (in respect of jet flights on domestic routes priority DD must be used).

1.2 Flight Plan Messages shall be addressed to the following:-

a) The ATSU at all manned aerodromes at which the flight is planned to land;

b) ATSUs which act in respect of movement messages for unmanned neighbouring aerodromes at which the flight is planned to land;

c) The ATSU nominated as the reporting station in respect of search and rescue action.

d) All ATCCs within who's FIRs or sectors the flight is planned to operate.

e) To the ATC Unit responsible for any controlled airspace which the flight will fly through.

f) In respect of other operations; to the operating agencies requested by the pilot of operator, or according to the Station Standing Instruction manual.

1.3 Filing Time

The date and time of the dispatch of the message to the Telecommunications Office.

1.4 Originator

The eight-letter originator indicator identifying the ATSU originating the message.

1.5 Text

The text of Flight Plan messages will consist of Items 3 to 18 inclusive, as completed on the Flight Plan Form.

2 Supplementary Flight Plan Message (SPL)

This type of message will only be sent in reply to a request for supplementary flight plan data.

2.1 Priority

The priority will be the same as the priority on the message requesting the information.

2.2 Addressing

Addressed to the ATSU requesting the information.

2.3 Filing Time

The date and time of the dispatch of the message to the telecommunications office.

2.4 Originator

The originator indicator, eight-letter group, identifying the originator of the message.

2.5 Text

a) The open bracket sign followed by the abbreviation (SPL;

b) Hyphen sign followed by Items 7, 16, 18 and 19; with the hyphen sign placed between successive items.

Example: *(SPL- Item7-16-18-19)*

3 Departure Message (DEP)

3.1 A departure message shall be sent immediately after take-off in respect of all flights for which a Flight Plan Message has been sent.

3.2 Departure Message shall also be sent immediately after take-off of schedule flights for which standard flight plans have been filed and whose movements must be notified to other ATSUs.

3.3 Priority

Normal priority of FF, however DD shall be used in respect of jet flights on domestic routes.

3.4 Addressing

3.4.1 Departure message shall be addressed to all the addressees indicted on the Flight Plan of the Standard Flight Plan Message.

3.4.2 The ATSU nominated as the Reporting Station in respect of overdue action. All ATCCs within whose FIRs the flight will operate up to its first landing at a manned aerodrome;

3.4.3 The ATCU responsible for any controlled airspace through which the flight will fly en-route to the first landing at a manned aerodrome;

3.4.4 In respect of a departure from a station which has sent a Delay Message;

3.4.5 In respect of other operators: to the Operating Agencies requested by the pilot or operator, or according to the Station Standing Instruction Manual.

3.5 Originator

The eight letter originator identifying the ATSU originating the message.

3.6 Text

a) The open bracket sign followed by the abbreviation (DEP- ;

b) The hyphen sign followed by the aircraft identification, as given in Item 7 of the flight plan;

c) Followed by the actual time of take-off in 4 figures;

d) The hyphen sign followed by the destination aerodrome;

e) The hyphen sign followed by any supplementary data it is desired to contain, such as persons on board (POB);

Note: In cases of flights for which standard FPL's have been filed, insert the hyphen sign followed by the FL and POB/.

f) The closed bracket sign.

Example: (DEP – SAA188 –FAJS0809 – HTDA)

(DEP - SAA301 - FACT0916 – FABL – FL190 - POB/79) (DEP

– ZSNVK – FAJS0916 – ZZZZ – F090 – 16/KOPPIES)

4 Delay Messages (DLA)

4.1 When a scheduled flight, or a flight for which a FPL was dispatched, has not left the loading apron within 30 minutes after the scheduled or estimated time of departure; or where there is reason to believe that such a flight will not be in a position to leave within the 30 minutes due to the late arrival of the aircraft on the previous sector or for any other reason, the ATSU shall dispatch a Delay Message, whether the operating agency requests that such a signal be sent or not.

Note: This will not prevent an ATSU from sending a delay message immediately information is received that a schedule flight will be delayed in excess of 30 minutes.

4.2 ATSUs may liaise with the airspace user to ascertain whether they desire any information regarding the delay or revised ETD to be included in the Delay Message, but this should not be permitted to delay the dispatch of the message.

4.3 ATSUs receiving Delay Messages must ensure that they are passed promptly to the information centre of the operator concerned.

4.4 Priority

GG

4.5 Addressing

4.5.1 Delay messages shall be addressed to in respect of a flight for which a Flight Plan Message has been sent being delayed, to all addressees on the Flight Plan Message and up to three operator's addressees as requested by the airspace user, or

4.5.2 Domestic Schedules:

a) To FAZZSDLA;

b) To the ATSUs at all centres served by that schedule and that ATCCs whose FIRs the flight will enter, (using ZQ or ZF as appropriate) in respect of delays at en-route stopping points the delay message will only be sent to those ATSUs concerned with the remainder of the flights;

c) Met offices at all points in b) above;

d) A maximum of three operator's addressees as requested by the pilot or operator's agent;

4.5.3 International Schedules

a) To FAZZSDLA;

b) To all ATSUs to whom the flight plan was sent or would normally be sent;

c) A maximum of three operator's addressees as requested by the pilot or operator's agent;

d) Additional ATSUs requested by the pilot or operator's agent, setting a maximum of one line of addressees per delay;

4.6 Filing Time

The date and time of dispatching the message to the Telecommunications Office.

4.7 Originator

The eight letter originator indicator identifying the ATSU originating the message.

4.8 Text

a) The open bracket sign followed by the abbreviation (DLA- ;

b) The hyphen sign followed by the aircraft's identification,

c) The hyphen sign followed by the aircraft's registration as given in Item 18 of the flight plan;

d) The hyphen sign followed by the Aerodrome of departure and the ETD of the flight in four figures if ETD on the same day or in a six figure date/time group if ETD not the same day. If ETD is unknown, insert the abbreviation UNK;

e) The hyphen sign followed by the aerodrome of destination;

f) The close bracket sign.

Note: *The reason for the delay may be inserted after the Aerodrome of destination but before the close bracket sign. However, this information will only be inserted on the request of the pilot or operator's agent.*

Example: *(DLA - CAW003 - FAJS0800 - FAWM)*
(DLA - SAA502 - ZSSBA - FADN UNK - FAJS - FOG)
(DLA - SAA319 – ZSSAA - FACT1015 - FABL – RMK/awaiting pax from SAA728)

5 Arrival Message (ARR)

5.1 Arrival messages will only be sent in the following circumstances:-

a) Arrival of aircraft requesting an arrival message in Item 18 of their flight plan, to the address (es) in Item 18 of the flight plan.

b) Arrival or aircraft listed on Station Standing Instructions, to the address (es) in Station Standing Instructions.

5.2 Priority

GG

5.3 Addressing

As per paragraph 5.1.

5.4 Filing Time

The date and time of dispatching the message to the Telecommunications Office.

5.5 Originator

The eight letter originator indicator identifying the ATSU originating the message.

5.6 Text

a) The open bracket sign followed by the abbreviation (ARR- ;

b) The hyphen sign followed by the aircraft's identification, as given in Item 7 of the flight plan;

c) The hyphen sign followed by the location indicator of the point departure;

d) The hyphen sign followed by one group of 8 characters:-

  i) 4 letter location indicator of point of arrival

  ii) 4 figures indicating time of arrival.

e) Close brackets sign

Examples: *(ARR - SAA316-FAJS - FABL0947)*
(ARR - ZSCDV - FADN - ZZZZ1615 – 16/PALMIET)

6 Boundary Estimate Messages (EST)

Whenever an aircraft's boundary estimate will vary by more than three minutes from the estimate in Item 18 of the flight plan, the ATSU or sector whose area the flight will be leaving must advise the ATSU or sector whose area the flight will be entering. This notification should normally be done by telephone or ATS/DS whenever possible, but when this is not possible a Boundary Estimate Message shall be sent on the AFTN.

6.1 Priority

DD or FF

6.2 Addressing

To the ATSUs whose airspace the flight will be entering (Using ZQ or ZF as appropriate).

6.3 Filing Time

The date and time of the message to the Telecommunications Office.

6.4 Originator

The eight letter originator indicator identifying the ATSU originating the message.

6.5 Text

a) The open brackets sign followed by the abbreviation (EST;

b) The hyphen sign followed by the aircraft's identification and SSR data as given in Item 7 of the flight plan;

c) The hyphen sign followed by the aerodrome of departure;

d) The hyphen sign followed by an indication of the point where the transfer is to be made. This could be the 2 letter code of a beacon, a 4 letter location indicator, a place name or the letters FIR;

e) An oblique stoke;

f) Time estimated over the boundary point in 4 figures;

g) The cleared level in the form of F… (FL), A… (Altitude) or VFR;

h) If the aircraft will cross the boundary while climbing or descending a supplementary group will be added showing the level at or below which, or at or above which the flight will cross the boundary followed by a letter:-

   i) The letter A will be used if the flight will cross the boundary at or above the level indicated in this group; or

   ii) The letter B will be used if the flight will cross the boundary at or below the level indicated in this group;

i) The hyphen sign followed by the aerodrome of destination;

j) The close brackets sign

Examples:

(EST – SAA022 – FL290 – GWV/0900)
(EST – SAA022 – FAJS – FVHA –FL290- GWV/0900) (EST
– SAA022 – FAJS – FL290 – GWV/0900 – FVHA)

7 Modification Message (CHG)

Whenever there is a change effected to the data contained in a Flight Plan Message already sent to the ATSUs concerned with the flight, they must all be notified. It is particularly important to notify of changes to Flight Level or Flight Rules, whether the change is made before departure or en-route. Such notification may be done by telephone or ATS/DS when possible; otherwise it must be done by means of a Modification Message sent on the AFTN.

7.1 Priority

DD or FF

7.2 Addressing

To the ATSUs concerned with the flight (Using ZQ or ZF as appropriate).

7.3 Filing Time

The date and time of the dispatch of the message to the Telecommunications Office.

7.4 Originator

The eight letter group identifying the originator.

7.5 Text

a) The open brackets sign followed by the abbreviation (CHG- ;

b) The hyphen sign followed by the aircraft's identification and SSR data as given in Item 7 of the flight plan;

c) The hyphen sign followed by the aerodrome of departure;

d) The hyphen sign followed by the aerodrome of destination;

e) The hyphen sign followed by the Item number of the flight plan Item to be changed;

f) An oblique stroke;

g) The whole Item as revised;

Note: If there are changes to be made to more than one item, sub-paragraphs 7.5(e) to (f) will be repeated for each field it is intended to change.

h) The close bracket sign.

Example:

An aircraft on a charter flight which filed IFR at FL90 changes plan to fly VFR at FL95:-

(CHG - ZSDAL - FAWM - FAEL - 8/VN - 15/N0190F095 DCT)

8 Cancellation Messages (CNL)

When a schedule flight or a flight for which a Flight Plan Message has been sent, is subsequently cancelled, the ATSU at the point where the flight is cancelled shall send a Cancellation Message.

8.1 Priority

GG

8.2 Addressing

Same as for delay messages.

8.3 Filing Time

The date and time of dispatching the message to the Telecommunications Office.

8.4 Originator

The eight letter originator indicator identifying the ATSU originating the message.

8.5 Text

a) The open brackets sign followed by the abbreviation (CNL- ;

b) The hyphen sign followed by the aircraft's identification as given in Item 7 of the flight plan;

c) The hyphen sign followed by the aerodrome at which the flight is cancelled;

d) The hyphen sign followed by the aerodromes(s) of destination;

e) The close brackets sign.

Example:

(CNL - SAA212 - FAJS - FVHA)
(CNL - ZSBMH - FAAB - FAUP)

9 Supplementary Messages

9.1 Supplementary messages comprise of the following;

a) Request flight plan messages (RQP).

b) Supplementary flight plan messages (SPL).

c) Request supplementary flight plan messages (RQS).

9.2 Request Flight Plan Messages (RQP)

A request flight plan message shall be transmitted when an ATSU wishes to obtain flight plan data. This might occur upon receipt of a message concerning an aircraft for which no corresponding basic flight plan data had been previously received. The RQP message shall be transmitted to the transferring ATSU which originated an EST message, or to the ATSU which originated an update message for which no corresponding basic flight plan data is available. If no message has been received at all, but an aircraft establishes RTF communications and requires air traffic services, the RQP message shall be transmitted to the previous ATSU along the route of flight.

9.3 Supplementary Flight Plan Messages (SPL)

9.3.1 A supplementary flight plan message shall be transmitted by the ATSU at the departure aerodrome to ATSUs requesting information additional to that already transmitted in a CPL or FPL message. When transmitted by the AFTN, the message shall be assigned the same priority indicator as that in the request message (See Chapter 6 paragraph 2).

9.3.2 When an ATSU wishes to obtain supplementary flight plan data from the ATSU at the aerodrome of departure, or in the case of a flight plan submitted in flight, from the ATSU specified in the flight plan message, a message shall be sent as described in the following sub-paragraphs.

9.4 Request Supplementary Flight Plan Message (RQS)

A request supplementary flight plan message shall be transmitted when an ATSU wishes to obtain supplementary flight plan data. The message shall be transmitted to the air traffic services reporting office at the departure aerodrome or in the case of a flight plan submitted during flight, to the air traffic services unit specified in the flight plan message.

9.4.1 Priority

DD or FF

9.4.2 Addressing

To the ATSU which originated the flight plan message.

9.4.3 Filing Time

The date and time of dispatch the message to the Telecommunications Office.

9.4.4 Originator

The eight letter originator indicator identifying the ATS Unit originating the message.

9.4.5 Text

a) The open brackets sign followed by the abbreviation (RQS- ;

b) The hyphen sign followed by the aircraft's identification and SSR data as given in Item 7 of the Flight Plan;

c) The hyphen sign followed by the aerodrome of departure;

d) The hyphen sign followed by the aerodrome of destination;

e) The close brackets sign.

Example:

(RQS - MAU833/A4446 - FIMP - FAJS)
(RQS - ZSBDW - FVHA - FAJS)

10 Modification Messages (CHG)

A CHG message shall be transmitted when any change is made to the basic flight plan data contained in a previously transmitted FPL or RPL data. The CHG message shall be sent to those recipients of the basic flight plan data which are affected by the change.

10.1 Priority

FF or DD

10.2 Addressing

Modification messages shall be addressed to:-

a) Up to 3 operators' addresses as requested by the pilot or operator's agent (Where necessary, this information shall be contained in the SSI Manual);

b) FAZZADIV if bound to/from FAJS.

10.3 Filing Time

The date and time of dispatch of the message to the Telecommunications Office.

10.4 Originator

The eight letter originator indicator identifying the ATSU originating the message.

10.5 Text

a) The open bracket sign followed by the abbreviation (CHG- ;

b) Hyphen sign followed by the aircraft's Identification and/or SSR Mode and Code;

c) Hyphen sign followed by the Departure Aerodrome;

d) Hyphen sign followed by the affected items;

e) The close bracket sign.

Examples: *(CHG-SFR225-FAJS-FADN-16/FAJS)*
(CHG-SFR225-FAJS-FADN-16/FAJS0045 FABL)

Section 10 Air Traffic Services Messages

Chapter 7 System NOTAM

Note: Refer also to Section 11, Chapter 2

1 **General**

1.1 When System NOTAMs are issued, the message shall be in accordance with the following;

1.2 **NOTAM Classification**

1.2.1 NOTAMs issued within South Africa are classified in the following series;

a) Series A NOTAM — NOTAM containing information of concern to long and medium range flights and given selected international distribution.

b) Series B NOTAM — NOTAM containing full information on all aerodromes/heliports, facilities and procedures available for use in international civil aviation and given international distribution to adjacent States and other States on request.

c) Series C NOTAM — NOTAM containing information of concern to aircraft other than those engaged in international civil aviation and given national distribution only.

1.3 **NOTAM Addresses**

1.3.1 System NOTAMs are issued by the International NOTAM Office and shall be addressed in accordance with the collective (abbreviated) AFTN address system.

1.3.2 All ATSUs in South Africa and adjacent States, selected Central/North African States and other non-African countries shall receive series 'A' and/or 'B' NOTAMs.

1.3.3 Intercontinental and medium range international flights shall be briefed on series 'A' NOTAMs only; international flights to adjacent States on series 'A' and 'B' NOTAMs and domestic flights on series 'A', 'B' and 'C' NOTAMs depending on the trajectory and cruising level of the flight.

1.4 Filing Time

The date and time of the dispatch of the message to the Telecommunications Office.

1.5 Originator

The eight letter group identifying the ATSU originating the message.

1.6 Text

The text of a NOTAM shall be compiled in accordance with the relative instruction in paragraph 1.8 below.

1.7 Message Identifiers

a) NOTAMN if it concerns a NOTAM containing new information.

b) NOTAMR if it concerns a NOTAM replacing a previous NOTAM, followed by the series and number/year of the NOTAM replaced (e.g. A0125/03 NOTAMR A0123/03).

c) NOTAMC if it concerns a NOTAM cancelling a previous NOTAM, followed by the series and number/year of the cancelled NOTAM (e.g. A0460/03 NOTAMC A0456/03).

1.8 **Standard NOTAM Format** (See paragraph 1.8.10 for an example of the format).

1.8.1 General

The qualifier line (Item Q) and all identifiers (Items A to G inclusive) each followed by a closing parenthesis, as shown in the format, shall be transmitted unless there is no entry to be made against a particular identifier.

1.8.2 NOTAM Numbering

Each NOTAM shall be allocated a series identified by a letter and a four-digit number followed by a stroke and a two-digit number for the year (e.g. A0023/03).

1.8.3 Qualifiers (Item Q)

Item Q is divided into eight fields, each separated by a stroke. If no entry is to be made in a field, it is not necessary to transmit blanks between the strokes. The definition of each field is as follows:

a) FIR - ICAO location indicator of affected FIR or, if applicable to more than one FIR within the RSA, the first two letters of the ICAO location indicator plus "XX". The ICAO location indicators of the FIRs concerned shall then be listed in Item A.

b) NOTAM CODE - All NOTAM Code groups contain a total of five letters and the first letter is always the letter Q. The second and third letters identify the subject, and the fourth and fifth letters denote the status of the subject reported upon.

   I) If the subject is not listed in the NOTAM Code or in the NOTAM selection criteria, insert "XX" as the second and third qualifiers.

II) If the condition of the subject is not listed in the NOTAM Code (ICAO Doc 8400) or in the NOTAM Selection Criteria (ICAO Doc 8126), insert "XX" as the fourth and fifth letters (e.g. QFAXX);

III) When a NOTAM containing operationally significant information is issued in accordance with Annex 15, Chapter 6 and Appendix 4 and used to announce the existence of AIRAC AIP Amendments or Supplements, insert "TT" as the fourth and fifth letters of the NOTAM Code;

IV) When a NOTAM is issued containing a checklist of valid NOTAM, insert QKKKK as the second, third, fourth and fifth letters; and

V) The following fourth and fifth letters of the NOTAM Code shall be used in NOTAM cancellations:

a) AK Resumed normal operation.
b) AL Operative (or re-operative) subject to previously published limitations/conditions.
c) AO Operational.
d) CC Completed.
e) XX Plain language.

c) Traffic

I) I = IFR
II) V = VFR
III) K = NOTAM is a checklist

d) Purpose

I) N = NOTAM selected for the immediate attention of aircraft operators
II) B = NOTAM selected for PIB entry
III) O = NOTAM concerning flight operations
IV) M = Miscellaneous NOTAM, not subject for a briefing, but it is available on request
V) K = NOTAM is a checklist.

e) Scope

I) A = Aerodrome
II) E = En-route
III) W = Navigation warning
IV) K = NOTAM is a checklist

f) Lower

LOWER limits shall always be completed and shall only be expressed in flight levels (FL). In the case of navigation warnings and airspace restrictions, values entered shall be consistent with those provided under Items F and G. If the subject does not contain specific height information, insert -000" for LOWER and "999" for UPPER as default values.

g) Upper

As per paragraph 1.8.3 (f).

h) Coordinates, Radius

The latitude and longitude accurate to one minute, as well as a three-digit distance figure giving the radius of influence in NM (e.g. 470ON01140EO43). Coordinates present approximate centre of circle whose radius encompasses the whole area of influence and if the NOTAM affects the entire FIR/UIR or more than one FIRIUIR, enter the default value -999" for radius.

1.8.4 Item A

Insert the location indicator of the aerodrome or FIR in which the facility, airspace, or condition being reported on is located. More than one FIR/UIR may be indicated when appropriate. If there is no available ICAO location indicator, use the ICAO nationality letter as given in Doc 7910, Part 2, plus XX and followed up in Item E by the name, in plain language.

1.8.5 Item B

For date/time group, use a ten-figure group, giving year, month, day, hours and minutes in UTC. This entry is the date-time at which the NOTAMN comes into force. In the cases of NOTAMR and NOTAMC, the date-time group is the actual date and time of the NOTAM origination.

1.8.6 Item C

With the exception of NOTAMC, a date-time group (a ten figure group giving year, month, day, hours and minutes in UTC) indicating duration of information shall be used unless the information is, of a permanent nature in which case the abbreviation "PERM" is inserted instead. If the information on timing is uncertain, the approximate duration shall be indicated using a date-time group followed by the abbreviation "EST". Any NOTAM which includes an "EST' shall be cancelled or replaced before the date-time specified in Item C.

1.8.7 Item D

If the hazard, status of operation or condition of facilities being reported on will be active in accordance with a specific time and date schedule between the dates-time indicated in Items B and Q, insert such information under Item D). If Item D) exceeds 200 characters, consideration shall be given to providing such information in a separate, consecutive NOTAM.

1.8.8 Item E

Use decoded NOTAM Code, complemented where necessary by ICAO abbreviations, indicators, identifiers, designators, call signs, frequencies, figures and plain language. When a NOTAM is selected for international distribution, English text shall be included for those parts expressed in plain language. This entry shall be clear and concise in order to provide a suitable PIB entry. In the case of NOTAMC, a subject reference and status message shall be included to enable accurate plausibility checks.

1.8.9 Items F & G

These items are normally applicable to navigation warnings or airspace restrictions and are usually part of the PIB entry. Insert both lower and upper height limits of activities or restrictions, clearly indicating reference datum and units of measurement.

1.8.10 **NOTAM FORMAT (EXAMPLE)**

Priority Indicator	→
Address	
«≡	
Date and Time of filing	«≡
Originator’s Indicator	→

Message Series Number and Identifier

NOTAM containing new information	. ... NOTAMN (series and number / year)
NOTAM replacing a previous NOTAM	.... NOTAMR .... (series and number / year) (series and number / year of NOTAM to be replaced)
NOTAM cancelling a previous NOTAM	.... NOTAMC .... «≡ (series and number / year) (series and number / year of NOTAM to be cancelled)

Qualifiers

	FIR	NOTAM Code	Traffic	Purpose	Scope	Lower Limit	Upper Limit	Co-ordinates, radius	
Q)	/	Q /	/	/	/	/	/		«≡

Identification of ICAO location identifier in which the facility, airspace or condition reported on is located.	A) →

Period of Validity

From (date-time group	B)		→	
To (PERM or date-time group)	C)		est.* perm*	«≡
Time Schedule (if applicable)	D)		→	
			«≡	

Text of NOTAM : Plain Language Entry (Using ICAO Abbreviations)

E)

«≡

Lower Limit	F) →
Upper Limit	G) «≡
Signature	

* Delete as appropriate

Section 10 Air Traffic Services Messages

Chapter 7 Aeronautical Administrative Messages

1 General

1.1 Aeronautical Administrative Message originated by ATSUs shall comprise of the following:-

a) Messages regarding the operation of facilities essential to the safety or regularity of aircraft operations; and

b) Messages essential to the efficient functioning of the aeronautical communication services.

1.2 Priority

GG or KK.

1.3 Addressing

To the ATSUs and/ or Authorities concerned.

1.4 Filing Time

The date and time of the dispatch of the message to the Telecommunications Office.

1.5 Originator

The eight letter group identifying the originator.

1.6 Text

a) Texts must be in a standard form when sending the messages for which standard texts or lay-outs are prescribed.

b) When sending messages for which standard texts or lay-outs are not prescribed, the texts must be drafted as briefly, clear and concise as possible, using authorised abbreviations where possible.

Section 10 Air Traffic Services Messages

Chapter 8 Search and Rescue, Accident & Incident Reports

1 Search and Rescue Reports

1.1 When an ATSU considers that an aircraft is in a state of emergency as defined in the SASAR manual, an alerting message shall be sent by completing a SAR reporting form CA172-08 and passing the resulting message on the AFTN.

Note: Form CA172-08 is only used for the initial declaration of a SAR phase and not for the up or down-grading of SAR phases, where an ALR message is used.

1.2 Priority

SS

1.3 Addressing

a) To the responsible ARCC; Civilian SAR FAZZARCC (include FAXVYCYX and AFCP803 if oceanic).

b) All ATCCs in whose FIR the flight was planned to operate;

c) The departure aerodrome (if there is an ATSU there);

d) The destination aerodrome (if there is an ATSU there);

e) Any manned aerodrome near the intended route where the aircraft may have landed;

f) The alternates listed on the flight plan;

g) The aircraft owner or operator.

1.4 Filing Time

The date and time of dispatch of the message to the telecommunications office.

1.5 Originator

The six or eight letter originator indicator identifying the ATSU originating the message.

1.6 Text

a) The text of ALR messages will be compiled by inserting all the relevant information which is available in the appropriate blocks on the CA172-08 form.

b) Delete those parts of the CA172-08 form which are not applicable to the incident being reported, or for which the information is not readily available.

c) When transmitting ALR messages, the letters printed in the white blocks must also be transmitted so as to facilitate decoding by the recipient.

2 Accident Reports

2.1 When a report of an aircraft accident is made to, or originated by an ATSU, a CA172-14 form (Accident Report) shall be dispatched via the AFTN.

Priority

a) FF = For reporting minor accidents without fatalities.

b) DD = For reporting accidents with fatalities and/or serious injuries.

2.3 Addressing

a) FAZZACCD;

b) To the manager of the relevant ATCC if the ATSU receiving or originating the report is not itself the ATCC for the relevant FIR;

c) To FAZZAMIL (ATT: CAF314 and AFCP803) if a SAAF aircraft is involved.

2.4 Filing Time

The date and time of the dispatch of the message to the telecommunications office.

2.5 Originator

The eight letter originator indicator identifying the ATSU originating the message.

2.6 Text

As per the current CA172-14 form.

3 Incident Reports

3.1 AIR TRAFFIC INCIDENT REPORT

An air traffic incident report shall be submitted, normally to the air traffic services unit concerned, for incidents specifically related to the provision of air traffic services involving such occurrences as aircraft proximity (AIRPROX), obstructions on runways, runway incursions, or other serious difficulty resulting in a hazard to aircraft, caused by, among others, faulty procedures, noncompliance with procedures, or failure of ground facilities. When a report of an aircraft or ATS incident is made to, or originated by an ATSU.

Priority

a) FF = For reporting all incidents.

3.3 Addressing

a) FAZZINCD;

b) To the manager of the relevant ATCC if the ATSU receiving or originating the report is not itself the ATCC for the relevant FIR;

c) To FAZZAMIL (ATT: CAF314 and AFCP803) if a SAAF aircraft is involved.

3.4 Filing Time

The date and time of the dispatch of the message to the telecommunications office.

3.5 Originator

The eight letter originator indicator identifying the ATSU originating the message.

Section 11 Aeronautical Information Management

Chapter 1 General

1 Introduction

1.1 All ATSUs are responsible for making available to airspace users on request, accurate information on aerodrome operations, navigation, surveillance and air traffic services within the area of responsibility of the RSA.

1.2 The International AIMU shall be responsible for making available such information as in paragraph 1.1 and in respect of adjacent FIRs as detailed in the approved Station Standing Instructions manual.

1.3 ATSUs shall maintain the following documents:

a) The South African Aeronautical Information Publication (SA-AIP);

b) AIP Supplement (AIP SUP);

c) Aeronautical Information Circulars (AIC); and

d) Current NOTAM's

e) Special Air Reports

1.4 Aeronautical information data can be prepared in advance and can be valid for a lengthy period of time; other data changes in real-time and becomes obsolete almost immediately. As a principle, any valid and relevant information will be made available as soon as it becomes available to the airspace users.

1.5 Airspace users shall be informed without delay on receipt of such information on changes which may affect their planning.

Section 11 Aeronautical Information Management

Chapter 2 NOTAM

1 Origination

1.1 A NOTAM shall be originated and issued promptly whenever the information to be disseminated is of a temporary nature and of short duration or when operationally significant permanent changes or temporary changes of long duration are made at short notice.

1.2 A NOTAM shall be originated and issued whenever the following information is of direct operational significance:

a) Establishment, closure or significant changes in operation of aerodrome(s) or runways;

b) Establishment, withdrawal and significant changes in operation of aeronautical services;

c) The establishment or withdrawal of electronic and other aids to air navigation and aerodromes. This includes: interruption or return to operation, change of frequencies, change in notified hours of service, change of identification, change of orientation (directional aids), change of location, power increase or decrease amounting to 50 percent or more, change in broadcast schedules or contents, or irregularity or unreliability of operation of any electronic aid to air navigation, and air- ground communication services;

d) Establishment, withdrawal or significant changes made to visual aids;

e) Interruption of or return to operation of major components of aerodrome lighting systems;

f) Establishment, withdrawal or significant changes made to procedures for air navigation services;

g) Occurrence or correction of major defects or impediments in the manoeuvring area;

h) Changes to and limitations on availability of fuel, oil and oxygen;

i) Major changes to search and rescue facilities and services available;

j) Establishment, withdrawal or return to operation of hazard beacons marking significant obstacles to air navigation;

k) Changes in regulation requiring immediate action, e.g. prohibited areas for SAR action;

l) Presence of hazards which affect air navigation (including obstacles, military exercises, displays, races, major parachuting events outside promulgated sites);

m) Erecting, removal of or changes to significant obstacles to air navigation in the take-off/climb, missed approach, approach areas and runway strip;

n) Establishment or discontinuance (including activation or de-activation) as applicable, or changes in the status of prohibited, restricted or danger areas;

o) Establishment or discontinuance of areas or routes or portions thereof where the possibility of interception exists and where the maintenance of guard on the VHF emergency frequency 121.5 MHz is required;

p) Allocation, cancellation or change of location indicators;

q) Significant changes in the level of protection normally available at an aerodrome for rescue and fire fighting purposes. NOTAM shall be originated only when a change of category is involved and such changes of category shall be clearly stated (see ICAO Annex 14, Volume 1, Chapter 9, and Attachment A, Section 17);

r) Presence or removal or significant changes in hazardous conditions due to snow, slush, ice or water on the movement area;

Note: Notifications of such conditions as in paragraph (r) is to be made preferably by use of the SNOWTAM format or the NOTAM code (Doc 8400) and plain language.

s) Outbreaks of epidemics necessitating changes in notified requirements for inoculations and quarantine measures;

t) Forecasts of solar cosmic radiation, where provided;

u) Occurrence of pre-eruption volcanic activity, the location, date and time of volcanic eruptions and the existence, density and extent of volcanic ash cloud, including direction of movement, flight levels and routes or portions of routes which could be affected.

v) Release into the atmosphere of radioactive materials or toxic chemicals following a nuclear or chemical incident, the location, date and time of the incident, the flight levels and routes or portions thereof which could be affected and the direction of movement;

w) Establishment of operations of humanitarian relief missions, such as those undertaken under the auspices of United Nations, together with procedures and/or limitations which affect air navigation; and

x) Implementation of short-term contingency measures in cases of disruption, or partial disruption, of air traffic services and related supporting services.

1.3 When an AIP Amendment or an AIP Supplement is published in accordance with AIRAC procedures, a NOTAM shall be originated giving a brief description of the contents, the effective date and the reference number to the amendment of supplement. This NOTAM shall come into force on the same effective date as the amendment or supplement and shall remain valid in the pre-flight information bulletin for a period of fourteen days.

1.4 The need for origination of a NOTAM should be considered in any other operationally significant circumstances.

1.5 The following information shall not be notified by a NOTAM:

a) Routine maintenance work on aprons and taxiways which does not affect the safe movement of aircraft;

b) Runway marking work, when aircraft operations can safely be conducted on other available runways or the equipment used can be removed when necessary;

c) Temporary obstructions in the vicinity of aerodromes that do not affect the safe operation of aircraft;

d) Partial failure of aerodrome lighting facilities where such failure does not directly affect aircraft operation;

e) Partial temporary failure of air-ground communications when suitable alternative frequencies are known to be available and are operative;

f) The lack of apron marshalling services and road traffic control;

g) The unservicability of location, destination or other instructions signs on the aerodrome movement area;

h) Parachuting when in uncontrolled airspace under VFR when controlled, at promulgated sites or within danger or prohibited areas;

i) Other information of a similar temporary nature.

1.6 At least seven days advance notice shall be given of the activation of established danger, restricted, or prohibited areas and of activities requiring temporary airspace restrictions other than for emergency operations.

1.7 Notice of any subsequent cancellation of the activities or any reduction of the hours of activity or the dimensions of the airspace should be given as soon as possible.

Note: Whenever possible, at least 24 hours advance notice is desirable, to permit timely completion of the notification process and to facilitate airspace utilisation planning.

1.8 NOTAM notifying unservicability of aids to air navigation, facilities or communication services should give an estimate of period of unservicability or the time at which restoration of the service is expected.

2 General Specifications

2.1 A NOTAM series is identified by a letter and a four-digit number followed by a stroke and a two-digit number for the year. The four-digit number shall be consecutive and based on the calendar year.

2.2 Each NOTAM shall deal with only one subject and one condition of the subject.

2.3 Each NOTAM shall be as brief as possible and compiled in such a way that its meaning is clear without the need to refer to another document.

2.4 Each NOTAM shall be transmitted as a single telecommunication message.

2.5 A NOTAM containing permanent or temporary information of long duration shall carry an appropriate AIP or AIP Supplement references.

2.6 When a NOTAM is issued which cancels or replaces a previous NOTAM, the series and number of the previous NOTAM shall be indicated. The series, location indicator and subject of both NOTAM shall be the same. Only one NOTAM shall be cancelled or replaced by a NOTAM.

2.7 When errors occur in a NOTAM, a NOTAM with a new number to replace the erroneous NOTAM shall be issued.

2.8 Location indicators included in the text of a NOTAM shall be those contained in Location Indicators (Doc 7910).

2.9 In no case shall a curtailed form of such indicators be used.

2.10 Where no ICAO location indicator is assigned to the location, the place name shall be spelt in plain language.

2.11 A checklist of valid NOTAM shall be issued as a NOTAM over the Aeronautical Fixed Service (AFS) at intervals of not more than one month. One NOTAM shall be issued for each series.

2.12 A checklist of NOTAM shall refer to the latest AIP Amendments, AIP Supplements and at least the internationally distributed AIC.

2.13 A checklist of NOTAM shall have the same distribution as the actual message series to which they refer and shall be clearly identified as checklist.

2.14 A monthly printed plain-language list of valid NOTAM, including indications of the latest AIP Amendments, AIC issued and a checklist of AIP Supplements shall be prepared with a minimum of delay and forwarded by the most expeditious means to recipients of the Integrated Aeronautical Information Package.

3 Distribution

3.1 A NOTAM shall be distributed on the basis of a request.

3.2 A NOTAM shall be prepared in conformity with the relevant provisions of the ICAO communication procedures.

3.3 The aeronautical fixed telecommunication network (AFTN) shall, whenever practicable, be employed for NOTAM distribution.

3.4 When a NOTAM exchanged as specified in paragraph 2.11 is sent by means other than the aeronautical fixed telecommunication network (ATFN), a six-digit date-time group indicating the date and time of NOTAM origination, and the identification of the originator shall be used preceding the text.

3.5 NOTAM transmitted over the international telecommunication service shall be composed in the ICAO NOTAM code complemented by ICAO abbreviations, indicators, identifiers, designators, call sign, frequencies, figures and plain language.

Note 1: The ICAO NOTAM code and ICAO abbreviations are those contained in ICAO abbreviation and Codes (Doc 8400).

Note 2: A SNOWTAM may be used for information relating to snow, slush, ice, and standing water associated with snow, slush, and ice on the movement area.

3.6 The SA-CAA shall select the NOTAM's that are to be distributed internationally.

3.7 Selective distribution lists should be used when practicable. These lists are intended to obviate superfluous distribution of information.

3.8 International exchange of a NOTAM shall take place only as mutually agreed between the International NOTAM Offices concerned.

3.9 These exchanges of NOTAM between International NOTAM offices shall, as far as practicable be limited to the requirements of the receiving State concerned by means of separate series providing for at least international and domestic flights.

3.10 A predetermined distribution system for NOTAM transmitted on the AFTN shall be used whenever possible, subject to paragraph 2.11.

3.11 A NOTAM should not remain in force for more than 3 months. If the circumstances notified exceed 3 months, then a new or replacement NOTAM should be issued, particularly in those cases where a condition is only expected to last for a further period of one or two months. It should also be noted that any changes of a long duration (3 months or longer) are required to be published in an AIP Supplement (AIP SUP).

Section 11 Aeronautical Information Management Chapter 3 Summary of Documents

1 Aeronautical Information Regulation and Control (AIRAC)

1.1 Information concerning the circumstances listed in paragraph 3.2 shall be distributed under the regulated system (AIRAC), i.e. Basing establishment, withdrawal or significant changes upon a series of common effective dates at intervals of 28 days. The information notified therein shall not be changed further for at least another 28 days after the effective date, unless the circumstance notified is of a temporary nature and would not persist for the full period.

1.2 The establishment, withdrawal of, and premeditated significant changes (including operational trials) to:

a) Limits (horizontal and vertical), regulations and procedures applicable to:

b) Flight information regions;

c) Control areas;

d) Control zones;

e) Advisory areas;

f) ATS routes;

g) Permanent danger, prohibited and restricted areas (including type and periods of activity when known) and ADIZ;

h) Permanent areas or routes or portions thereof where the possibility of interception exists.

1.3 Positions, frequencies, call signs, known irregularities and maintenance periods of radio navigation aids and communication facilities.

1.4 Holding and approach procedures, arrival and departure procedures, noise abatement procedures and any other pertinent ATS procedures.

1.5 The regulated system (AIRAC) should also be used for the provision of information relating to the establishment and withdrawal of and premeditated significant changes in the circumstances contained in paragraph 3.6.

1.6 The establishment and withdrawal of, and premeditated significant changes to:

a) Position, height and lighting of navigational obstacles.

b) Taxiways and aprons.

c) Hours of service: aerodromes, facilities and services.

d) Customs, immigration and health services.

e) Temporary danger, prohibited and restricted areas and navigational hazards, military exercises and mass movements of aircraft.

f) Temporary areas or routes or portions thereof where the possibility of interception exists.

1.7 When information has not been submitted by the AIRAC date, a NIL notification shall be originated and distributed by NOTAM or by other suitable means, not later than one cycle before the AIRAC effective date concerned.

1.8 Implementation dates other than AIRAC effective dates shall not he used for pre-planned operationally significant changes requiring cartographic work and/or for updating of navigation databases.

1.9 The use of the date in the AIRAC cycle which occurs between 21 December and 17 January inclusive should be avoided as an effective date for the introduction of significant changes under the AIRAC system.

1.10 In all instances, information provided under the AIRAC system shall be published in paper copy form and shall be distributed by the SACAA at least 42 days in advance of the effective date with the objective of reaching recipients at least 28 days in advance of the effective date.

1.11 Whenever major changes are planned and where advance notice is desirable and practicable, a publication date of at least 56 days in advance of the effective date should be used.

2 AIP Supplements (AIP SUPP)

2.1 Since the AIP is an operational document and therefore subject to frequent change, provisions exist for its continual updating. In addition, changes of a temporary nature affecting the contents of an AIP are often required to cater for unexpected circumstances or, in some cases, planned modifications to a service or facility.

2.2 The purpose of an AIP Supplement is to bring to the attention of users both temporary changes or long duration (three months or longer) and information of short duration containing extensive text or graphics which affect one or more parts of the AIP. Operationally significant changes to the AIP issued as an AIP Supplement must be published under the AIRAC procedures.

2.3 Specifications For AIP Supplements

2.3.1 Temporary changes of long duration (three months or longer) and information of short duration which contains extensive text and/or graphics shall be published as AIP Supplement.

2.3.2 Each AIP Supplement shall be allocated a serial number which shall be consecutive and based on the calendar year e.g. 2/03.

2.3.3 AIP Supplement pages shall be kept in a binder as long as all, or part of their contents remains valid.

2.3.4 The pages should be printed on coloured paper (preferably yellow) in order to be conspicuous.

2.3.5 When an AIP Supplement is sent in replacement of a NOTAM, it shall include a reference to the serial number of the NOTAM.

3 Aeronautical Information Circulars (AIC)

3.1 An AIC shall be originated whenever it is necessary to promulgate aeronautical information which does not qualify for the origination of a NOTAM, or for inclusion into the AIP, but which relates to flight safety, air navigation, technical, administrative or legislative matters.

3.2 An AIC shall be originated whenever it is desirable to promulgate:

a) A long-term forecast of any major change in legislation, regulations, procedures or facilities;

b) Information of a purely explanatory or advisory nature liable to affect flight safety;

c) Information or notification of an explanatory or advisory nature concerning technical, legislative or purely administrative matters. This shall include:

I. Forecasts of important changes in the air navigation procedures, services and facilities provided;

II. Forecasts of implementation of new navigational systems;

III. Significant information arising from aircraft accident/ incident investigation which has a bearing on flight safety;

IV. Information on regulations relating to the safeguarding of international civil aviation against acts of unlawful interference;

V. Advice on medical matters of special interest to pilots;

VI. Warnings to pilots concerning the avoidance of physical hazards;

VII. Effects of certain weather phenomena on aircraft operations;

VIII. Information on new hazards affecting aircraft handling techniques.

IX. Regulations relating to the carriage of restricted articles by air;

X. Reference to the requirements of, and publication of changes in, national legislation;

XI. Aircrew licensing arrangements;

XII. Training of aviation personnel;

XIII. Application of, or exemption from, requirements in national legislation;

XIV. Advice on the use and maintenance of specific types of equipment;

XV. Actual or planned availability of new or revised editions of aeronautical charts;

XVI. Carriage of radio equipment;

XVII. Explanatory information relating to noise abatement;

XVIII. Selected airworthiness directives;

XIX. Changes in NOTAM series or distribution, new editions of AIP or major changes in their contents, coverage or format;

XX. Other information of a similar nature.

3.3 General Specifications of AIC

3.3.1 An AIC shall be issued in printed form which will include both text and diagrams.

3.3.2 The SACAA shall select the appropriate AIC that are to be given international distribution.

3.3.3 Each AIC shall be allocated a serial number which should be consecutive and based on the calendar year.

3.3.4 When AIC are distributed in more than one series, each series shall be separately identified by a letter.

3.3.5 The SACAA differentiates and identifies the various AIC topics in the following manner:

a)	General,	Series 10 to 19	White
b)	Operation of aircraft,	Series 20 to 29	Orange
c)	Personnel licensing,	Series 30 to 39	Ivory
d)	Air navigation services,	Series 40 to 49	Pink
e)	Aerodromes,	Series 50 to 59	Green
f)	Airworthiness,	Series 60 to 69	Blue

3.3.6 A checklist of AIC currently in force shall be issued during January, April, July and October each year.

4 Aeronautical Information Publication (AIP)

4.1 The AIP forms the basic element of the Integrated Aeronautical Information Package. It contains aeronautical information of a permanent nature and temporary changes to this information of long duration. It is the task of the SACAA to provide a comprehensive document, to ensure its accuracy and simplicity in use.

4.2 The AIP is divided into three parts:

a) PART I - GENERAL (GEN), consisting of five sections, contains information of an administrative and explanatory nature which is not of such significant importance that NOTAM need be issued (See paragraph 3.31);

b) PART 2 - EN-ROUTE (ENR), consisting of seven sections, contains information concerning airspace and its use (See paragraph 3.32); and

c) PART 3 - AERODROMES (AD), consisting of four sections, contains information concerning aerodromes/ heliports and their use (***See paragraph 3.33).***

4.3 **General (GEN)**: Aeronautical Information Publications shall include in Part 1;

a) GEN 0 – Preface, record of AIP amendments and supplements, checklist of AIP pages, list of hand amendments and a table of contents to Part 1;

b) GEN 1 – National regulations and requirements;

c) GEN 2 – Tables and codes;

d) GEN 3 – Services;

e) GEN 4 – Charges for aerodromes/heliports and air navigation services.

4.4 **En-Route (ENR)**: Aeronautical Information Publications shall include in Part 2;

a) ENR 0 - Preface, record of AIP amendments and supplements, checklist of AIP pages, list of hand amendments and a table of contents to Part 2;

b) ENR 1 – General rule and procedures;

c) ENR 2 – Air traffic services airspace;

d) ENR 3 – ATS routes;

e) ENR 4 – Radio navigation aids/systems;

f) ENR 5 – Navigation warnings;

g) ENR 6 – En-route charts.

4.5 **Aerodromes (AD)**: Aeronautical Information Publications shall include in Part 3;

a) AD 0 - Preface, record of AIP amendments and supplements, checklist of AIP pages, list of hand amendments and a table of contents to Part 2;

b) AD 1 – Aerodromes/Heliports – Introduction;

c) AD 2 – Aerodromes;

d) AD 3 – Heliports.

4.6 General Specifications

4.6.1 The SA-AIP is a self-contained document and shall include a table of contents.

4.6.2 The AIP shall not duplicate information within itself or from other sources.

4.6.3 The SA-AIP is published in a loose-leaf form unless the complete publication is reissued at frequent intervals.

4.6.4 Each page of the SA-AIP shall indicate the amendment number including the month (by name) and the year. Charts and plates effective dates shall also be indicated on each page.

4.6.5 A checklist giving the current date of each page in the Aeronautical Information Publication series shall be reissued frequently to assist the user in maintaining a current publication. The page number/chart title and date of the checklist shall appear on the checklist itself.

4.6.6 Each Aeronautical Information Publication issued as a bound volume and each page of an Aeronautical Information Publication issued in loose-leaf form shall be so annotated as to indicate clearly;

a) The identity of the Aeronautical Information Publication;

b) The area of responsibility covered and subdivisions where necessary;

c) The identification of the RSA and the SACAA as the producing authority;

d) Page numbers and chart titles;

e) The degree of reliability if the information is doubtful.

4.6.7 All changes to the AIP, or new information on a reprinted page, shall be identified by a vertical line on the left side of the margin.

4.6.8 Operationally significant changes to the AIP shall be published in accordance with AIRAC procedures and shall be clearly identified by the acronym - AIRAC.

4.6.9 The AIP shall be amended or reissued at such regular intervals as may be necessary to keep them up to date. Recourse to hand amendments or annotations shall be kept to the minimum. The normal method of amendment shall be by means of replacement sheets.

4.6.10 Permanent changes to the AIP shall be published as AIP Amendments.

4.6.11 Each AIP Amendment shall be allocated a serial number, which shall be consecutive.

4.6.12 Each AIP Amendment page, including the cover sheet, shall display a publication date.

4.6.13 Each AIRAC AIP Amendment page, including the cover sheet, shall display an effective date.

4.6.14 When an AIP Amendment is issued, it shall include references to the serial number of those elements, if any, of the integrated Aeronautical Information Package which have been incorporated into the amendment.

4.6.15 A brief indication of the subjects affected by the amendment shall be given on the AIP Amendment cover sheet.

4.6.16 When an AIP Amendment will not be published at the established interval or publication date, a NIL notification shall be originated and distributed by the monthly printed plain language list of valid NOTAM.

Section 12 FLIGHT AND FLOW — INFORMATION FOR A COLLABORATIVE ENVIRONMENT (FF-ICE) SERVICES

Chapter 1 INTRODUCTION

Note.— The implementers of the Flight and Flow — Information for a Collaborative Environment (FF-ICE) services are not exempted from fulfilling requirements to exchange flight plan and other associated movement messages, in accordance with- provisions in Section 2, Chapter 8 and Section 10, with operators and ATS units that have not implemented FF-ICE services.

1.1 The FF-ICE services may include any of the following:

a) planning service: the evaluation of a preliminary flight plan (PFP) with respect to flight plan acceptability and, where practicable, the indication of applicable restrictions and resultant constraints on the flight;

b) filing service: the evaluation of a filed flight plan (eFPL) for the provision of air traffic services and indication of flight plan acceptability;

c) trial service: the evaluation of a trial request with respect to flight plan acceptability and, where practicable, the indication of applicable restrictions and resultant constraints on the flight;

Note.— The trial service offers an opportunity for an operator or designated representative to submit “what-if” scenarios and to receive feedback from an FF-ICE services unit, prior to submitting a PFP, eFPL or flight plan update.

d) flight data request service: the provision of data regarding a specific flight such as the latest version of a filed flight plan or search and rescue data upon request by an eligible recipient;

e) notification service: the provision of data regarding a certain flight event such as departure and arrival to required recipients; and

f) publication service: the publication of flight and flow data for access by authorized subscribers.

Note.— Further details on the restrictions and constraints can be found in the Manual on Flight and Flow — Information for a Collaborative Environment (FF-ICE) (Doc 9965).

1.2 When any of the FF-ICE services in paragraph 1.1 are to be implemented, the provision and use of such services shall be effected in accordance with the provisions of this Section.

Chapter 2 GENERAL PROVISIONS

2.1 When it has been determined that FF-ICE services will be provided, the appropriate ANSP shall:

a) designate at least one FF-ICE services unit;

b) arrange for, as a minimum, the provision of the filing service and flight data request service;

c) ensure that the FF-ICE services unit(s) maintains the ability necessary to exchange ATS messages with operators and ATS units that have not implemented FF-ICE services, in accordance with provisions in Section 10; and

d) arrange for the promulgation of information on the availability of FF-ICE services, associated procedures and conditions in the Aeronautical Information Publications (AIP).

2.2 The associated procedures and conditions to be published in the AIP shall include, inter alia, the following:

a) instructions for constructing valid flight plans for submission (paragraph 4.1.1 and 4.1.2 refer);

b) the point in time and/or conditions after which procedures change for submission of a Flight Plan Update message (paragraph 4.4.1 refers);

c) if applicable, the period of time and point in time and/or conditions under which an update to the Planning Status and Filing Status messages is provided (paragraph 4.5.2 refers);

d) if applicable, the types of flight data that can be requested via the FF-ICE flight data request service (paragraph 4.7.1 refers); and

e) if applicable, the time limits for submission of a PFP message (paragraph 4.2.3 refers).

Chapter 3 FLIGHT AND FLOW — INFORMATION FOR A COLLABORATIVE ENVIRONMENT (FF-ICE) MESSAGES

3.1 The messages prescribed in Table 12-1 shall be used to exchange information as indicated in the procedures for FF-ICE services in Chapter 4.

3.2 FF-ICE messages shall comply with the technical and interoperability requirements contained in Chapter 5.

3.3 The content of an FF-ICE message shall allow for translation to a corresponding ATS message when necessary to meet the requirements of Section 10. This includes the translation of:

a) an eFPL message to an FPL message;

b) a Flight Plan Update message to a CHG or DLA message; and

c) a Flight Cancellation message to a CNL message.

Note 1.— See also 2.1 c) concerning a required capability to support a mixed mode environment.

Note 2.— Additional data items defined for use in the FF-ICE messages that do not correspond to an existing data item in the ATS message may not be translated.

Note 3.— Information on data items requiring translation and guidance on the use of algorithms to minimize loss of data during translation are contained in the Manual on Flight and Flow — Information for a Collaborative Environment (Doc 9965).

3.4 It is not the intention that personnel involved in the provision and use of the FF-ICE services see the whole content of FF-ICE messages, the majority of which are to be generated by computer systems. However, flight plan information shall be displayed or made available for verification, coordination and necessary modifications by those personnel, such as flight operations officer or flight data processing officer.

Table 12-1. Standard Flight and Flow — Information for a Collaborative Environment (FF-ICE) Messages

Note 1.— The term “message” refers to a discrete unit of communication, expressed electronically, and intended for consumption by a recipient or group of recipients.

Note 2.— Specific details on FF-ICE messages including content, format and data conventions are described in the Manual on Flight and Flow — Information for a Collaborative Environment (Doc 9965).

Message	*Description*
Submission Response	A response message indicating whether a submitted FF-ICE message is valid or not. In case of rejection, it also indicates the reason.
Preliminary Flight Plan (PFP)	A flight plan (to be) submitted for collaborative flight planning, prior to submitting a Filed Flight Plan (eFPL) message.
Planning Status	A response to a validated PFP message indicating the flight plan acceptability and, where practicable, applicable restrictions and constraints.

Trial Request	A query to evaluate a flight plan under consideration for an intended flight.
Trial Response	A response to a validated Trial Request message indicating the expected flight plan acceptability and, where practicable, applicable restrictions and constraints.
Filed Flight Plan (eFPL)	A flight plan (to be) submitted as a request for air traffic services.
Filing Status	A response to a validated eFPL message indicating the flight plan acceptability.
Flight Plan Update	An update to the information contained in a previously submitted flight plan (PFP or eFPL).
Flight Cancellation	An instruction to cancel and remove a previously submitted flight plan (PFP or eFPL).
Flight Data Request	A query for flight plan or search and rescue information for a particular flight.
Flight Data Response	A response to a validated Flight Data Request message, which includes the requested data.
Flight Departure	A notification that a flight has departed.
Flight Arrival	A notification that a flight has landed.

Chapter 4 PROCEDURES FOR FF-ICE SERVICES

4.1 GENERAL

Note.— Each FF-ICE service has an applicable set of messages and associated procedures, and some procedures are used by more than one service.

4.1.1 An originator shall ensure that an FF-ICE message complies with an applicable format and data conventions.
4.1.2 A recipient shall validate the FF-ICE message by checking its compliance with the applicable format and data conventions and to the extent possible, for completeness and accuracy.
4.1.3 Each recipient shall respond to each of the messages identified below with a Submission Response message as soon as practicable after validation of a message pursuant to paragraph 4.1.2:

a) Preliminary Flight Plan (PFP);

b) Filed Flight Plan (eFPL);

c) Flight Plan Update;

d) Trial Request;

e) Flight Cancellation;

f) Flight Departure;

g) Flight Arrival; and

h) Flight Data Request.

4.1.4 Upon receipt of a Submission Response indicating that the message has been rejected, the recipient of the Submission Response shall take action, as necessary.

4.1.5 The originator of PFP, eFPL or Flight Plan Update messages shall include flight plan version information that allows a recipient to verify that the flight plan version in the message is more recent than previously received, and that no incremental updates were missed.

4.1.6 When the flight plan version of a received message is older than the one currently held, or incremental updates are missing, the recipient shall take action to obtain the latest version of the flight plan.

4.2 Preliminary flight plan (PFP)

4.2.1 The FF-ICE planning service shall be effected by the submission of a Preliminary Flight Plan (PFP) message by an operator or designated representative to each FF-ICE services unit from which evaluation is needed and that has indicated the availability of the service.

4.2.2 A PFP message shall include the following data items, as a minimum when first submitted, and be augmented as more information is available to the operator:

a) globally unique flight identifier (GUFI);

b) aircraft identification;

c) departure aerodrome;

d) estimated off-block date and time; and

e) destination aerodrome.

Note.— Provisions on the generation and use of a GUFI are contained in Annex 10 — Aeronautical Telecommunications, Volume II — Communication Procedures including those with PANS status.

4.2.3 The time limits for submission of a PFP message determined by the appropriate ATS authority or on the basis of regional air navigation agreements shall be published in the AIP.

4.2.4 A PFP message shall be rejected if a filed flight plan exists for the given flight.

4.2.5 FF-ICE services units shall evaluate the validated PFP message and provide an appropriate response in accordance with paragraph 4.5.

4.2.6 Submission of a PFP message shall not substitute for the submission of an eFPL message.

4.3 Filed flight plan (eFPL)

4.3.1 The FF-ICE filing service shall be effected by the submission of a Filed Flight Plan (eFPL) message by an operator or designated representative.

4.3.2 Unless otherwise prescribed by the appropriate ANSP, an operator or its designated representative electing to use FF-ICE services shall submit:

a) an eFPL to each FF-ICE services unit concerned along the route of a flight; and

b) an FPL to each ATS unit unable to process an eFPL, as directed by the AIP relevant to each airspace the flight is expected to traverse.

Note 1.— When so prescribed, the FF-ICE service unit may optionally offer related functionality, for example: an operator or its designated representative may submit an eFPL only to an FF-ICE services unit serving the departure aerodrome. The FF-ICE services unit may assume responsibility for the provision of the flight plan information and changes thereto in an appropriate format to all relevant units concerned along the route of flight, and for provision of appropriate responses back to an operator or its designated representative.

Note 2.— Acceptable methods for translating eFPL to FPL can be found in the Manual on Flight and Flow — Information for a Collaborative Environment (Doc 9965).

4.3.3 An eFPL message shall include, as a minimum, the GUFI and the flight data items prescribed by the provisions in Annex 2, 3.3.2 and Section 10 of this manual.

Note.— Provisions on the generation and use of a GUFI are contained in Annex 10 — Aeronautical Telecommunications, Volume II — Communication Procedures including those with PANS status.

4.3.4 The FF-ICE services unit shall ensure that the filed flight plan is made available to all ATS units concerned within its area of responsibility.

4.3.5 When so required by the agreement between the appropriate ANSP to assist in the identification of flights and thereby eliminate or reduce the need for interceptions in the event of deviations from the assigned track, the FF-ICE services unit shall also provide an eFPL message to the FF-ICE services unit of each FIR or upper FIR in close proximity to specified routes or airspace the flight is expected to traverse.

4.3.6 The FF-ICE services units shall evaluate the validated filed flight plan and provide an appropriate response in accordance with paragraph 4.5.

4.4 Flight plan update

4.4.1 An FF-ICE services unit shall publish in the AIP, pursuant to paragraph 2.2, the applicable conditions which cause the procedures for the submission of a Flight Plan Update message to change.

Note.— Depending on a local arrangement between an FF-ICE services unit and an ATS unit formulating ATC clearances, flight plan updates may not be accepted after a certain point of time, which is important information to operators.

4.4.2 When any change is to be made to a previously submitted flight plan (PFP or eFPL, as appropriate), an operator or designated representative shall submit a Flight Plan Update message to all the recipients of the previously submitted flight plan.

4.4.3 When such a change results in additional entities not previously having received the flight plan concerned, the operator or designated representative shall submit a latest version of the complete flight plan (PFP or eFPL as appropriate), with all prior updates incorporated, to those recipients that are newly affected by the change.

4.4.4 When the submitted flight plan message (PFP or eFPL) includes a flight plan version number exactly one greater than the one currently held, the flight plan message shall be processed as an update to the previously submitted flight plan.

4.4.5 When a flight plan version number contained in a Flight Plan Update message is not exactly one greater than the one currently held, the Flight Plan Update message shall be rejected and the version mismatch shall be indicated to the operator.

4.4.6 When a rejection of a Flight Plan update message due to a version mismatch is received, the operator or designated representative shall submit the latest version of the complete flight plan (PFP or eFPL as appropriate).

4.4.7 When a flight plan has been provided pursuant to paragraph 4.3.3 and 4.3.4, the FF-ICE services unit shall keep those recipients informed of any changes to the filed flight plan including the case when, following a change, the flight is no longer of concern to the recipients.

4.4.8 Upon validation of a flight plan update message, the FF-ICE services units shall evaluate the update to the previously submitted flight plans and provide an appropriate response in accordance with paragraph 4.5.

4.5 Flight plan evaluation

4.5.1 Each individual FF-ICE services unit shall determine the acceptability of the flight plan or flight plan update, and send an appropriate FF-ICE message (Planning Status message or Filing Status message) as soon as practicable. In case of the Planning Status message, it shall be sent no later than three hours before the estimated off-blocks time.

Note 1. — Flight plan acceptability is determined based on a separate evaluation of semantics and the assessment of compliance with applicable restrictions and/or constraints.

Note 2. — The response messages resulted from the flight plan evaluation are additional to the Submission Response message provided pursuant to 4.1.3.

4.5.2 The FF-ICE services unit may wish to provide an update to the Planning Status or Filing Status in order to reflect changes

in relevant restrictions or applicable flight constraints. In such cases, the period of time and/or conditions under which an update to the Planning Status and Filing Status messages is provided shall be published in the AIP pursuant to 2.2.
4.5.3 In response to the Planning Status or Filing Status message, the operator or designated representative shall evaluate the contents and take action as necessary.

4.6 Flight cancellation

4.6.1 To cancel a flight for which a preliminary or filed flight plan was previously submitted, an operator or designated representative shall submit a Flight Cancellation message to each FF-ICE services unit that was previously provided with the flight plan concerned.
4.6.2 Upon validation of a Flight Cancellation message, an FF-ICE services unit shall take necessary actions to ensure that the flight is not considered as an intended flight. Such actions may include, but are not limited to:

a) not accepting any further FF-ICE messages that include the GUFI of the cancelled flight;
b) notifying FF-ICE services units and/or ATS units that are aware of the flight; and
c) removing the flight from ATC systems.
4.6.3 When a previously cancelled flight needs to be re-established, a flight plan shall be submitted in the same manner as it is for a new flight.

4.7 Flight data request

4.7.1 An FF-ICE services unit may make available any information about a flight that is deemed useful, but as a minimum, shall be capable of providing the following information, when applicable, upon request:

a) the most recent version of a preliminary flight plan;
b) the most recent version of a filed flight plan;
c) supplementary search and rescue information;
d) the latest planning status; or
e) the latest filing status.

4.7.2 To obtain flight plan information about a specific flight such as listed in paragraph 4.7.1, a Flight Data Request message shall be submitted to an appropriate FF-ICE services unit that has been identified as holding the desired information.
4.7.3 A Flight Data Request message submitted by an operator or designated representative shall concern only a flight under its operational control.
4.7.4 An FF-ICE services unit shall validate whether the received Flight Data Request message originates from an entity eligible

for requesting such information.
4.7.5 Upon validation of a Flight Data Request message, the FF-ICE services unit shall provide the requested flight data as soon as practicable.
4.7.6 When unable to provide the requested data, the FF-ICE services unit shall send a Submission Response Message - Reject and indicate the reasons for the inability to provide the requested data.

4.8 Trial request

4.8.1 The FF-ICE trial service shall be effected through the submission of a Trial Request message by an operator or designated representative to each FF-ICE services unit from which evaluation is needed and that has indicated provision of the service. A Trial Request message may be submitted to an FF-ICE services unit that was not along the original route of flight and did not previously receive the flight plan, in order to evaluate a reroute into the airspace for which the FF-ICE services unit is designated to serve.
4.8.2 Upon validation of a Trial Request message, an FF-ICE service unit shall, as soon as practicable, determine the acceptability of the potential changes to an intended flight, and send a Trial Response message.
4.8.3 The information contained in the Trial Request message shall not be used for the purpose of air traffic flow management or air traffic services.

4.9 Notification

When it has been determined that the FF-ICE notification service will be used as a means to meet the requirements of transmitting the flight departure and arrival prescribed in Section 10, the Flight Departure message and Flight Arrival message shall be used in lieu of DEP and ARR messages.

Chapter 5 TECHNICAL AND INTEROPERABILITY REQUIREMENT

5.1 FF-ICE services shall make use of information services.

Note 1. — In the context of system-wide information management, the information service addresses machine-to-machine interaction in a service-oriented architecture.

Note 2. — Procedures on information services are contained in the Procedures for Air Navigation Services - Information Management (PANS-IM, Doc 10199).

5.2 The providers and users of the FF-ICE services shall adopt an information exchange model that:

a) provides the structure and format of the required flight and flow data elements, including their properties, associations and data types, and data value constraints;

b) enables the construction and exchange of the standard FF-ICE messages in Table 12-1; and

c) provides a mechanism by which additional flight and flow data and/or FF-ICE messages can be used without affecting global interoperability.

Note. — *Details on the structure and format of the flight and flow data elements and FF-ICE messages are contained in the Manual on Flight and Flow — Information for a Collaborative Environment (FF-ICE) (Doc 9965).*