RWANDA CIVIL AVIATION AUTHORITY

RWANDA CIVIL AVIATION TECHNICAL STANDARDS – AIR TRAFFIC SERVICES

RCATS-ATS001

Fourth Edition

December 2024

FOREWORD

The Director General, under Article 11 of the law, No.20/2018 of 29/04/2018 is empowered to develop and promote appropriate, clear and concise regulatory requirements and technical civil aviation safety and security standards;

The Rwanda Technical Standards (RCATS) - Air Traffic Services are issued by the Authority to prescribe standards and requirements in line with civil aviation regulations to be met by air navigation services providers.

The standards are based mainly on PANS-ATM (Doc.4444) and with such modifications as may be determined by the Authority to be applicable in Rwanda. This Amendment Captures Amendment 12 to the procesures of Air navigation services (PANS-ATM) and aligned it to the new promulgated Air Traffic Services Regulations

Amendments to RCATS -ATS is a responsibility of the Authority. Readers should forward advice of errors, inconsistencies or suggestions for improvement to the Authority.

This Amendment supersedes the Amendment of May 2020.

Director General

Rwanda Civil Aviation Authority.

RECORD OF AMENDENTS

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Chapter 1: GENERAL

1.1.1 The Rwanda Civil Aviation Technical Standards -Air Traffic Services contains standards pertaining to the provision of Air Traffic Services in order to meet the requirements of the Rwanda Civil Aviation law and compliments Civil Aviation (Air Traffic Services) regulations The Authority is responsible for the development, promulgation and amendment of these Standards. Complementary publications including Advisory Circulars, etc. are provided to further assist ATS providers in complying with these standards and regulations, and the use of the word 'shall' indicates that compliance is compulsory

1.1.2 The Technical Standards for ATS) prescribes the detailed technical provisions that contains standards, procedures, instructions and information which are intended to form the basis of air traffic services within the Kigali Flight Information Region. The ATS provider in Rwanda is required to comply with the provisions these standards.

1.1.3 The ATS provider shall document local procedures in their own operational manuals to ensure the maintenance of and compliance with the Standards. The provisions of these Standards are based on the PANS-ATM (Doc.4444).

1.1.5 Where the ATS Provider is unable to comply with any provision in any of the Standards, they shall inform the Director General Rwanda Civil Aviation Authority within a reasonable period of time and in writing. The ATS Provider shall explain the basis for its non-compliance and proposal with its assessment in a timely manner and the Director General may approve the proposal, subject to such other conditions it may impose.

1.1.6 The ATS provider shall ensure that the units of measurement as specified in the Rwanda civil Aviation regulations part 38 are used for the provision of air traffic serves.

1.2.1 These Standards shall be read in conjunction with:

a) Rwanda Civil aviation regulations
b) ICAO Doc.4444
c) ICAO Regional Supplementary Procedures (Doc7030);
d) Rwanda Aeronautical Information Publication (AIP) and other relevant documents for clarity and compliant.

1.3.1 The terms used in this document, and defined below, are those used to describe facilities, services and procedures for air traffic and related services. As far as possible, the terms used in this document, and defined below, are those which have the widest international use;

Accepting unit Air traffic control unit next to take control of an aircraft

Accident: 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 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 flight and the primary propulsion system is shut down, in which:

a) a person is fatally or seriously injured as a result of:
   - being in the aircraft, or
   - direct contact with any part of the aircraft, including parts which have become detached from the aircraft, or
   - direct exposure to jet blast,

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 the passengers and 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, antennas, probes, vanes, tires, 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 those resulting from hail or bird strike(including holes in the radome) or;

c) The aircraft is missing or is completely inaccessible.

Note 1 - For statistical uniformity only, an injury resulting in death within thirty days of the date of the accident is classified as a fatal injury.

Note 2 - An aircraft is considered to be missing when the official search has been terminated and the wreckage has not been located.

Note 3.-The type of unmanned aircraft system to be investigated is addressed in Annex 13, 5.1.

Note 4.-Guidance for the determination of aircraft damage can be found in Annex 13, Attachment F.

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 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.

Advisory airspace; an 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 - An aircraft is in the vicinity of an aerodrome when it is in, entering or leaving an aerodrome traffic circuit.

Aerodrome traffic circuit: The specified path to be flown by aircraft operating in the vicinity of an aerodrome.

Aeronautical fixed service (AFS); a telecommunication service between specified fixed points provided primarily for the safety of air navigation and for the regular, efficient and economical operation of air services.

Aeronautical fixed service (AFS): A telecommunication service between specified fixed points provided primarily for the safety of air navigation and for the regular, efficient and economical operation of air services.

Aeronautical fixed station: A station in the aeronautical fixed service.

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.

Aeronautical mobile service *(RR S1.32);* A mobile service between aeronautical stations and aircraft stations, or between aircraft stations, in which survival craft stations may participate; emergency position-indicating radio beacon stations may also participate in this service on designated distress and emergency frequencies.

Aeronautical station (RR S1.81): A land station in the aeronautical mobile service. In certain instances, an aeronautical station may be located, for example, on board ship or on a platform at sea.

Aeronautical telecommunication station; a station in the aeronautical telecommunication service.

Airborne collision avoidance system (ACAS); An aircraft system based on secondary surveillance radar (SSR) transponder signals which operates independently of ground-based equipment to provide advice to the pilot on potential conflicting aircraft that are equipped with SSR transponders.

Aircraft; Any machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against the 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 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.

Aircraft proximity: A situation in which, in the opinion of a pilot or air traffic services personnel, the distance between aircraft as well as their relative positions and speed have been such that the safety of the aircraft involved may have been compromised. An aircraft proximity is classified as follows:

Risk of collision: The risk classification of an aircraft proximity in which serious risk of collision has existed.

Safety not assured: The risk classification of an aircraft proximity in which the safety of the aircraft may have been

compromised.

No risk of collision*:* The risk classification of an aircraft proximity in which no risk of collision has exist

Air-ground communication; Two-way communication between aircraft and stations or locations on the surface of the earth

AIRMET information; Information issued by a meteorological watch office concerning the occurrence or expected occurrence of specified en-route weather phenomena which may affect the safety of low-level aircraft operations and which was not already included in the forecast issued for low-level flights in the flight information region concerned or sub-area thereof

AIRPROX: The code word used in an air traffic incident report to designate aircraft proximity.

Air-report: A report from an aircraft in flight prepared in conformity with requirements for position, and operational and/or meteorological reporting**.**

Air-taxiing Movement of a helicopter/VTOL above the surface of an aerodrome, normally in ground effect and at a ground speed normally less than 37 km/h (20 kts)

Note - The actual height may vary, and some helicopters may require air-taxiing above 8 m (25 ft) AGL to reduce ground effect turbulence or provide clearance for cargo sling loads.

Air-to-ground communication: *One-way communication from aircraft to stations or locations on the surface of the earth.*

Air traffic; all aircraft in flight or operating on the manoeuvring area of an aerodrome

Air traffic advisory service; A 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; Authorization for an aircraft to proceed under conditions specified by an air traffic control unit.

Note 1- For convenience, the term "air traffic control clearance" is frequently abbreviated to "clearance" when used in appropriate contexts.

Note 2 - The abbreviated term "clearance" may be prefixed by the words "taxi", "takeoff", "departure", "en route", "approach" or "landing" to indicate the particular portion of flight to which the air traffic control clearance relates.

Air traffic control instruction: Directives issued by air traffic control for the purpose of requiring a pilot to take a specific action.

Air traffic control service; a service provided for the purpose of:

a) preventing collisions;

1) between aircraft, and

2) 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 controller schedule*:* *†* A plan for allocating air traffic controller duty periods and non-duty periods over a period of time, otherwise referred to as a roster.

Air traffic flow management (ATFM); A service established with the objective of contributing to a safe, orderly and expeditious flow of air traffic by ensuring that ATC capacity is utilized 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 the collaborative integration of humans, information, technology, facilities and services, supported by air and ground- and/or space-based communications, navigation and surveillance.

Air traffic service (ATS): A generic term meaning variously, flight information service, alerting service, air traffic advisory service, air traffic control service (area control service, approach control service or aerodrome control service)

Air traffic services airspaces; Airspaces of defined dimensions, alphabetically designated, within which specific types of flights may operate and for which air traffic services and rules of operation are specified.

Note - ATS airspaces are classified as Class A to G as described in 2.6.

Air traffic services reporting office: a unit established for the purpose of receiving reports concerning air traffic services and flight plans submitted before departure.

Note - An air traffic services 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: a generic term meaning variously, air traffic control unit, flight information centre or air traffic services reporting office.

Airway: A control area or portion thereof established in the form of a corridor

ALERFA: The code word used to designate an alert phase.

Alerting service: a service provided to notify appropriate organizations regarding aircraft in need of search and rescue aid, and assist such organizations as required.

Alert phase: a situation wherein apprehension exists as to the safety of an aircraft and its occupants

Alphanumeric characters (alphanumerics): A collective term for letters and figures (digits).

Alternate aerodrome; An aerodrome to which an aircraft may proceed when it becomes either impossible or inadvisable to proceed to or to land at the aerodrome of intended landing where the necessary services and facilities are available, where aircraft performance requirements can be met and which is operational at the expected time of use. Alternate aerodromes include the following:

Take-off Alternate: An alternate aerodrome at which an aircraft would be able to land should this become necessary shortly after take-off and it is not possible to use the aerodrome of departure.

En- route Alternate: An alternate aerodrome at which an aircraft would be able to land in the event that a diversion becomes necessary while en route.

Destination Alternate: An alternate aerodrome at which an aircraft would be able to land should it become either impossible or inadvisable to land at the aerodrome of intended landing.

Note - The aerodrome from which a flight departs may also be an 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.

Approach control service: Air traffic control service for arriving or departing controlled flights

Approach control unit: a unit established to provide air traffic control 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: the relevant authority designated by the State responsible for providing air traffic services in the airspace concerned.

Apron: A defined area, on a land aerodrome, intended to accommodate aircraft for purposes of loading or unloading passengers, mail or cargo, fuelling, parking or maintenance.

Apron management service: a service provided to regulate the activities and the movement of aircraft and vehicles on an apron

Area control centre: a unit established to provide air traffic control service to controlled flights in control areas under its jurisdiction.

Area control service: Air traffic control service for controlled flights in control areas

Area navigation (RNAV): A method of navigation which permits aircraft operation on any desired flight path within the coverage of ground- or space-based navigation aids or within the limits of the capability of self-contained aids, or a combination of these.

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.

Area navigation route: An ATS route established for the use of aircraft capable of employing area navigation.

Assignment, assign: Distribution of frequencies to stations. Distribution of SSR codes or 24-bit aircraft addresses to aircraft.

ATS route: a specified route designed for channeling the flow of traffic as necessary for the provision of air traffic services.

Note 1 - The term "ATS route" is used to mean variously, airway, advisory route, controlled or uncontrolled route, arrival or departure route, etc.

Note 2 - An ATS route is defined by route specifications which include an ATS route designator, the track to or from significant points (waypoints), distance between significant points, reporting requirements and, as determined by the appropriate ATS authority, the lowest safe altitude.

ATS surveillance syste: A generic term meaning variously, ADS-B, PSR, SSR or any comparable ground-based system that enables the identification of aircraft.

Note. — A comparable ground-based system is one that has been demonstrated, by comparative assessment or other methodology, to have a level of safety and performance equal to or better than monopulse SSR.

Automatic dependent surveillance - broadcast (ADS-B). A means by which aircraft, aerodrome vehicles and other objects can automatically transmit and/or receive data such as identification, position and additional data, as appropriate, in a broadcast mode via a data link.

Automatic dependent surveillance - contract (ADS-C). A means by which the terms of an ADS-C agreement will be exchanged between the ground system and the aircraft, via a data link, specifying under what conditions ADS-C reports would be initiated, and what data would be contained in the reports.

Note - The abbreviated term "ADS contract" is commonly used to refer to ADS event contract, ADS demand contract, ADS periodic contract or an emergency mode.

Automatic terminal information service (ATIS). The automatic provision of current, routine information to arriving and departing aircraft throughout 24 hours or a specified portion thereof:

Data link-automatic terminal information service (D-ATIS): *The provision of ATIS via data link*

Voice-automatic terminal information service (Voice-ATIS): *The* provision of ATIS by means of continuous and repetitive voice broadcasts.

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.

Ceiling: The height above the ground or water of the base of the lowest layer of cloud below 6 000 m (20 000 ft) covering more than half the sky.

Calendar Discrete temporal reference system that provides the basis for defining temporal position to a resolution of one day

Change-over point The point at which an aircraft navigating on an ATS route segment defined by reference to very high frequency omni directional radio ranges is expected to transfer its primary navigational reference from the facility behind the aircraft to the next facility ahead of the aircraft.

Note - Change-over points are established to provide the optimum balance in respect of signal strength and quality between facilities at all levels to be used and to ensure a common source of azimuth guidance for all aircraft operating along the same portion of a route segment.

Clearance limit. The point to which an aircraft is granted an air traffic control clearance.

Code (SS R): 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 tracks of two aircraft, used as a basis for the application of separation (e.g. significant point, waypoint, navigation aid, fix**).**

Conference communications: Communication facilities whereby direct speech conversation may be conducted between three or more locations simultaneously

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 control service is provided in accordance with the airspace classification

Note - Controlled airspace is a generic term which covers ATS airspace Classes A, B, C, D and E as described in Appendix 4.

Controlled flight: Any flight which is subject to an air traffic control clearance.

Controller-pilot data link communications (CPDLC): A means of communication between controller and pilot, using data link for ATC communications.

Control zone: A controlled airspace extending upwards from the surface of the earth to a specified upper limit.

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.

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 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.

Cruising level: A level maintained during a significant portion of a flight

Current flight plan (CPL): The flight plan that reflects changes to the filed flight plan, if any, by subsequent ATC clearances

Cyclic redundancy checks (CRC): A mathematical algorithm applied to the digital expression of data that provides a level of assurance against loss or alteration of data

Danger area; An airspace of defined dimensions within which activities dangerous to the flight of aircraft may exist at specified times.

Data accuracy. A degree of conformance between the estimated or measured value and the true value

Data integrity: A degree of assurance that an aeronautical data and its value has not been lost nor altered since the origination or authorized amendment.

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.

Decision altitude (DA) or decision 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.

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, (or equivalent assurance level), traceability, timeliness, completeness and format.

Datum Any quantity or set of quantities that may serve as a reference or basis for the calculation of other quantities.

Declared capacity A measure of the ability of the ATC system or any of its subsystems 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 period of time, taking due account of weather, ATC unit configuration, staff and equipment available, and any other factors that may affect the workload of the controller responsible for the airspace.

DETRESFA: The code word used to designate a distress phase

Discrete code: A four-digit SSR code with the last two digits not being "00".

Distress phase A situation wherein there is reasonable certainty that an aircraft and its occupants are threatened by grave and imminent danger or require immediate assistance

Downstream clearance A clearance issued to an aircraft by an air traffic control unit that is not the current controlling authority of that aircraft.

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 the earth, measured from mean sea level.

Emergency phase A generic term meaning, as the case may be, uncertainty phase, alert phase or distress phase.

Estimated elapsed time: The estimated time required to proceed from one significant point to another.

Estimated off-block time: The estimated time at which the aircraft will commence movement associated with departure.

Estimated time of arrival: 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: The time at which ATC expects that an arriving aircraft, following a delay, will leave the holding fix to complete its approach for a landing.

Note. — The actual time of leaving the holding fix will depend upon the approach clearance.

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Fatigue. *†* A physiological state of reduced mental or physical performance capability resulting from sleep loss, extended wakefulness, circadian phase, and/or workload (mental and/or physical activity) that can impair a person's alertness and ability to perform safety-related operational duties

Fatigue risk management system (FRMS). *†* A data-driven means of continuously monitoring and managing fatigue-related safety risks, based upon scientific principles, knowledge and operational experience that aims to ensure relevant personnel are performing at adequate levels of alertness

Final approach that part of an instrument approach procedure which commences at the specified final approach fix or point, or where such a fix or point is not specified,

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 specified in the approach procedure; and

ends at a point in the vicinity of an aerodrome from which:

1) a landing can be made; or

2) a missed approach procedure is initiated.

Filed flight plan (FPL or eFPL): The latest flight plan as submitted by the pilot, an operator or a designated representative, for use by ATS units.

Note: 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 crew member: A licensed crew member charged with duties essential to the operation of an aircraft during a flight duty period.

Flight information centre: A unit established to provide flight information service and alerting service.

Flight information region (FIR): An airspace of defined dimensions within which flight information service and alerting service are 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: A surface of constant atmospheric pressure which is related to a specific pressure datum, 1 013.2 hectopascals (hPa), and is separated from other such surfaces by specific pressure intervals.

Note 1 - A pressure type altimeter calibrated in accordance with the Standard Atmosphere:

a) when set to a QNH altimeter setting, will indicate altitude;

b) when set to a QFE altimeter setting, will indicate height above the QFE reference datum;

c) when set to a pressure of 1 013.2 hPa, may be used to indicate flight levels.

Note 2 - The terms "height" and "altitude", used in Note 1 above, indicate altimetric rather than geometric heights and altitudes.

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 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 (FF-ICE) services unit: A unit designated by the appropriate ATS authority for the provision of FF-ICE services.

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.

FPL: The symbol used to designate a filed flight plan exchanged via aeronautical fixed service (AFS).

Forecast A statement of expected meteorological conditions for a specified time or period, and for a specified area or portion of airspace.

Geodetic datum. A minimum set of parameters required to define location and orientation of the local reference system with respect to the global reference system/frame.

Glide path: A descent profile determined 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: Calendar in general use; first introduced in 1582 to define a year that more closely approximates the tropical year than the Julian calendar.

Note - In the Gregorian calendar, common years have 365 days and leap years 366 days divided into twelve sequential months.

Ground visibility: The visibility at an aerodrome, as reported by an accredited observer or by automatic systems.

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 geographical location that serves as a reference for a holding procedure.

Holding procedure: A predetermined manoeuvre which keeps an aircraft within a specified airspace while awaiting further clearance.

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.

Human Factors principles: Principles which apply to aeronautical design, certification, training, operations and maintenance and which seek safe interface between the human and other system components by proper consideration to human performance

Human performance; Human capabilities and limitations which have an impact on the safety and efficiency of aeronautical operations

IFR: The symbol used to designate the instrument flight rules.

IFR flight: A flight conducted in accordance with the instrument flight rules.

IMC: The symbol used to designate instrument meteorological conditions.

INCERFA: The code word used to designate an uncertainty phase.

Incident: An occurrence, other than an accident, associated with the operation of an aircraft which affects or could affect the safety of operation.

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.

Note. — The types of incidents which are of main interest to the International Civil Aviation Organization for accident prevention studies are listed in Annex 13 attachment C

Instrument approach operations: An approach and landing using instruments for avigation 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 procedure (IAP): A series of predetermined manoeuvres by reference to flight instruments with specified protection from obstacles from the initial approach fix, or where applicable, from the beginning of a defined arrival route to a point from which a landing can be completed and thereafter, if a landing is not completed, to a position at which holding or en-route obstacle clearance criteria apply. Instrument approach procedures are classified as follows:

Non-precision approach (NPA) procedure. An instrument approach procedure designed for 2D instrument

Note. — Non-precision approach procedures may be flown using a continuous descent final approach (CDFA) technique. CDFAs with advisory VNAV guidance calculated by on-board equipment are considered 3D instrument approach operations. CDFAs with manual calculation of the required rate of descent are considered 2D instrument approach operations. For more information on CDFAs, refer to PANS-OPS (Doc 8168) Volume I, Part II, Section 5.

***Approach procedure with vertical guidance (*APV).** A performance-based navigation (PBN) instrument approach procedure designed for 3D instrument approach operations Type A.

Precision approach (PA) procedure. An instrument approach procedure based on navigation systems (ILS, MLS, GLS and SBAS Cat I) designed for 3D instrument approach operations Type A or B.

Preliminary flight plan (PFP): 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.

Instrument flight procedure design service: A service established for the design, documentation, validation, maintenance and periodic review of instrument flight procedures necessary for the safety, regularity and efficiency of air navigation.

Instrument meteorological conditions (IMC): Meteorological conditions expressed in terms of visibility, distance from cloud, and ceiling, less than the minima specified for visual meteorological conditions.

Note - The specified minima for visual meteorological conditions are contained in annex2.

Integrity classification (Aeronautical data): Classification based upon the potential risk resulting from the use of corrupted data. Aeronautical data is classified as:

a) routine data: there is a very low probability when using corrupted routine data that the continued safe flight and landing of an aircraft would be severely at risk with the potential for catastrophe;

b) essential data: there is a low probability when using corrupted essential data that the continued safe flight and landing of an aircraft would be severely at risk with the potential for catastrophe and;

c) Critical data: there is a high probability when using corrupted critical data that the continued safe flight and landing of an aircraft would be severely at risk with the potential for catastrophe.

International NOTAM office: An office designated by the Authority for the exchange of NOTAM internationally.

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

Maneuvering area: That part of an aerodrome to be used for the take-off, landing and taxiing of aircraft, excluding aprons

Meteorological office: An office designated to provide meteorological service for international air navigation

Missed approach procedure: The procedure to be followed if the approach cannot be continued.

Mode (SSR): The conventional identifier related to specific functions of the interrogation signals transmitted by an SSR interrogator. There are four modes specified in Annex 10: A, C, S and intermode

Movement area: That part of an aerodrome to be used for the take-off, landing and taxiing of aircraft, consisting of the maneuvering area and the apron(s).

Navigation specification: A set of aircraft and flight crew requirements needed to support performance-based navigation operations within a defined airspace. There are two kinds of navigation specifications:

Required navigation performance (RNP) specification*:* A navigation specification based on area navigation that includes the requirement for performance monitoring and alerting, designated by the prefix RNP, e.g. RNP 4, RNP APCH.

Area navigation (RNAV) specification: A navigation specification based on area navigation that does not include the requirement for performance monitoring and alerting, designated by the prefix RNAV, e.g. RNAV 5, RNAV 1.

Note 1 - The Performance-based Navigation (PBN) Manual (ICAO Doc 9613), Volume II contains detailed guidance on navigation specifications.

Note 2 - The term RNP, previously defined as "a statement of the navigation performance necessary for operation within a defined airspace", has been removed from this Manual as the concept of RNP has been overtaken by the concept of PBN. The term RNP in this Manual is now solely used in the context of navigation specifications that require performance monitoring and alerting, e.g. RNP 4 refers to the aircraft and operating requirements, including a 4 NM lateral performance with on-board performance monitoring and alerting that are detailed in ICAO Doc 9613.

Night: The time between fifteen minutes after sunset and fifteen minutes before sunrise, sunset and sunrise being determined at surface level and includes any time between sunset and sunrise when unlighted aircraft or other prominent unlighted object cannot clearly be seen at a distance of 4,572 m.

Non-duty period: A continuous and defined period of time, subsequent to and/or prior to duty periods, during which the air traffic controller is free of all duties.

NOTAM: A notice distributed by means of telecommunication containing information concerning the establishment, condition or change in any aeronautical facility, service, procedure or hazard, the timely knowledge of which is essential to personnel concerned with flight operations.

Obstacle: All fixed (whether temporary or permanent) and mobile objects, or parts thereof, that:

a) are located on an area intended for the surface movement of aircraft; or

b) extend above a defined surface intended to protect aircraft in flight; or

c) Stand outside those defined surfaces and that have been assessed as being a hazard to air navigation.

Obstacle clearance altitude (OCA) or obstacle clearance height (OCH). The lowest altitude or the lowest height above the elevation of the relevant runway threshold or the aerodrome elevation as applicable, used in establishing compliance with appropriate obstacle clearance criteria.

Operator: A person, organization or enterprise engaged in or offering to engage in an aircraft operation.

Performance-based communication (PBC)*:* Communication based on performance specifications applied to the provision of air traffic services.

Note. — An RCP specification includes communication performance requirements that are allocated to system components in terms of the communication to be provided and associated transaction time, continuity, availability, integrity, safety and functionality needed for the proposed operation in the context of a particular airspace concept.

Performance-based navigation (PBN): Area navigation based on performance requirements for aircraft operating along an ATS route, on an instrument approach procedure or in a designated airspace.

Note *- Performance requirements are expressed in navigation specifications (RNAV specification, RNP specification) in terms of accuracy, integrity, continuity, availability and functionality needed for the proposed operation in the context of a particular airspace concept.*

Performance-based surveillance (PBS): Surveillance based on performance specifications applied to the provision of air traffic services.

Note. — An RSP specification includes surveillance performance requirements that are allocated to system components in terms of the surveillance to be provided and associated data delivery time, continuity, availability, integrity, accuracy of the surveillance data, safety and functionality needed for the proposed operation in the context of a particular airspace concept.

Pilot-in-command: The pilot designated by the operator, or in the case of general aviation, the owner, as being in command and charged with the safe conduct of a flight.

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.

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.

Printed communications: Communications which automatically provide a permanent printed record at each terminal of a circuit of all messages which pass over such circuit

Prohibited Area: An airspace of defined dimensions, above the land areas or territorial waters of a State, within which the flight of aircraft is prohibited.

Radio navigation service: A service providing guidance information or position data for the efficient and safe operation of aircraft supported by one or more radio navigation aids.

Radiotelephony: A form of radio communication primarily intended for the exchange of information in the form of speech.

Reporting point: A specified geographical location in relation to which the position of an aircraft can be reported.

Required communication performance (RCP) specification*: a* set of requirements for air traffic service provision and associated ground equipment, aircraft capability, and operations needed to support performance-based communication.

Required surveillance performance (RSP) specification: A set of requirements for air traffic service provision and associated ground equipment, aircraft capability, and operations needed to support performance-based surveillance

Rescue coordination centre (RCC): A unit responsible for promoting efficient organization of search and rescue services and for coordinating the conduct of search and rescue operations within a search and rescue region.

Restricted Area: An airspace of defined dimensions, above the land areas or territorial waters of a State, within which the flight of aircraft is restricted in accordance to certain specified conditions.

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 runway surface markings or the lights delineating the runway or identifying its centre line.

Safety management system: a systematic approach to managing safety, including the necessary organizational 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.

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.

Significant point: A specified geographical location used in defining an ATS route or the flight path of an aircraft and for other navigation and ATS purposes.

Note - There are three categories of significant points: ground-based navigation aid, intersection and waypoint. In the context of this definition, intersection is a significant point expressed as radials, bearings and/or distances from ground-based navigation aids.

Situation display*:* An electronic display depicting the position and movement of aircraft and other information as required.

Special VFR flight: A VFR flight cleared by air traffic control to operate within a control zone in meteorological conditions below VMC or at night.

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.

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 en-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.

Stopway: A defined rectangular area on the ground at the end of take-off run available prepared as a suitable area in which an aircraft can be stopped in the case of an abandoned take-off.

Surveillance radar: Radar equipment used to determine the position of an aircraft in range and azimuth.

State safety programme: an integrated set of regulations and activities aimed at improving safety.

Station declination: an alignment variation between the zero-degree radial of a VOR and true north, determined at the time the VOR station is calibrated.

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 taxilane:*** 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 located on an apron and intended to provide a through taxi route across the apron.

c) Rapid exit taxiway. A taxiway connected to a runway at an acute angle and designed to allow landing aeroplanes to turn off at higher speeds than are achieved on other exit taxiways thereby minimizing 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.

Threshold: The beginning of that portion of the runway usable for landing.

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

Time-in-position: *†* The period of time when an air traffic controller is exercising the privileges of the air traffic controller's licence at an operational position.

Track: The projection on the earth's surface of the path of an aircraft, the direction of which path at any point is usually expressed in degrees from North (true, magnetic or grid).

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: Air traffic control unit in the process of transferring the responsibility for providing air traffic control service to an aircraft to the next air traffic control unit along the route of flight

Uncertainty phase: a situation wherein uncertainty exists as to the safety of an aircraft and its occupants.

VFR: Th***e*** symbol used to designate the visual flight rules.

VFR flight: a flight conducted in accordance with the visual flight rules.

Visual meteorological conditions (VMC): Meteorological conditions expressed in terms of visibility, distance from cloud, and ceiling, equal to or better than specified minima

Note - The specified minima are contained in Annex2.

VMC: The symbol used to designate visual meteorological conditions.

Waypoint: A specified geographical location used to define an area navigation route or the flight path of an aircraft employing area navigation. Waypoints are identified as either:

Fly-by waypoint: A waypoint which requires turn anticipation to allow tangential interception of the next segment of a route or procedure, or

***Flyover waypoint*:** A waypoint at which a turn is initiated in order to join the next segment of a route or procedure.

Chapter 2: ATS SAFETY MANAGEMENT

2.1.1 ATS provider shall be develope and Implement Safety management system in accordance with Part 30 of Civil Aviation regulations. The ATS provider shall ensure that the level of air traffic services (ATS) and communications, navigation and surveillance, as well as the ATS procedures applicable to the airspace or aerodrome concerned, are appropriate and adequate for maintaining an acceptable level of safety in the provision of ATS.

2.1.2 The requirements in respect of services, systems and procedures applicable to airspaces and aerodromes should be established on the basis of securing the highest practicable degree of uniformity in procedures in adjacent airspaces.

2.1.3 The ATS provider shall implement a safety management system (SMS) for the air traffic services under its jurisdiction and acceptable to RCAA.

2.1.4 A safety management system shall clearly define lines of safety accountability throughout the air traffic services provider, including a direct accountability for safety on the part of senior management.

Note. *— Related regulations and guidance that include the safety management provisions applicable to ATS providers is contained in civil Aviationregulations, part 30, RCATS –ATS t and the Safety Management Manual (SMM) (Doc 9859).*

2.2 Objective

2.2.1 The objectives of ATS safety management are to ensure that:

a) The established level of safety applicable to the provision of ATS within an airspace or at an aerodrome is met; and

b) safety-related enhancements are implemented whenever necessary.

2.3 ATS Safety Management Activities

2.3.1 The ATS provider shall ensure that the ATS SMS includes, *inter alia*, the following with respect to the provision of air traffic services:

a) Monitoring of overall safety levels and detection of any adverse trend;

b) Safety reviews of ATS units;

c) Safety risk assessments in respect of the planned implementation of airspace reorganizations, the introduction of new equipment systems or facilities, and new or changed ATS procedures; and

d) A mechanism for identifying the need for safety enhancing measures.

2.3.2 All activities undertaken in an ATS SMS shall be fully documented and retained for 90 days. When the documents are pertinent to inquires or investigations, they shall be retained for longer periods until it is evident that they will no longer be required.

2.4 Monitoring of Safety Levels

2.4.1 Monitoring of Safety Performance and Measurement

2.4.1.1 The ATS provider shall develop and maintain the means to verify the safety performance of the organization and to validate the effectiveness of safety risk controls.

The ATS provider's safety performance shall be verified in reference to the safety performance indicators and safety performance targets of the SMS**.**

2.4.2 Collection and evaluation of safety-related data

2.4.2.1 Data for use in safety monitoring programmes may be collected from as wide a range of sources as possible, as the safety-related consequences of particular procedures or systems may not be realized until after an incident has occurred.

2.4.2.2 The ATS provider shall establish a formal incident reporting system for ATS personnel to facilitate the collection of information on actual or potential safety hazards or deficiencies related to the provision of ATS, including route structures, procedures, communications, navigation and surveillance systems and other safety significant systems and equipment as well as controller workloads.

Note. — Guidance related to both mandatory and voluntary incident reporting systems is contained in the safety management manual (SMM) (Doc 9859)

2.4.3 Review of incident and other safety-related reports

2.4.3.1 The ATS provider shall establish procedures to ensure that Safety-related reports concerning the operation of air traffic services, including air traffic incident reports, are systematically reviewed to detect any adverse trend in the number and types of incidents which occur.

2.4.3.2 The ATS provider shall ensure that reports concerning the serviceability of ATS facilities and systems, such as failures and degradations of communications, surveillance and other safety significant systems and equipment, are systematically reviewed to detect any trend in the operation of such systems which may have an adverse effect on safety.

2.4.4 The management of change

2.4.4.1The ATS provider shall develop and maintain a process to identify changes which may affect the level of safety risk associated with its aviation products or services and to identify and manage the safety risks that may arise from those changes.

2.4.5 Continuous improvement of the SMS

2.4.5.1 The ATS provider shall monitor and assess the effectiveness of its SMS processes to enable continuous improvement of the overall performance of the SMS**.**

2.5.1 General Requirements

2.5.1.1 The ATS provider shall ensure that Safety reviews of ATS units are conducted on a regular and systematic basis by personnel qualified through training, experience and expertise and having a full understanding of relevant standards and civil aviation regulations, procedures for Air Navigation Services (PANS), safe operating practices and Human Factors Principles.

2.5.1.2 The ATS provider shall also establish and implement a mechanism for the safety review and elimination of deficiencies identified within the framework of Planning and Implementation Regional Groups (PIRGs) and those dificiencies identified in the provision of ATS.

2.5.2 Scope

2.5.2.1 The scope of ATS units' safety reviews should include at least the following issues:

2.5.2.1.1 ***Regulatory issues to ensure that*:**

a) ATS operations manuals, ATS unit instructions, unit logbooks and air traffic control (ATC) coordination procedures are complete, concise, and up- to –date;
b) The ATS route structure, where applicable, provides for:
    i) Adequate route spacing; and
    ii) Crossing points for ATS routes located so as to reduce the need for controller intervention and for inter-and intra-unit coordination;
c) the separation minima used in the airspace or at the aerodrome are appropriate and all the provisions applicable to those minima are being complied with;
d) where applicable, provision is made for adequate observation of the maneuvering area, and procedures and measures aimed at maximizing the potential for inadvertent runway incursions are in place. This observation may be performed visually or by means of an ATS surveillance system;
e) appropriate procedures for low visibility aerodrome operations are in place;

f) traffic volumes and associated controller workloads do not exceed defined, safe levels and that procedures are in place for regulating traffic volumes whenever necessary;

g) Procedures to be applied in the event of failures or degradations of ATS systems, including communications, navigation and surveillance systems, are practicable and will provide for an acceptable level of safety; and

h) Procedures for the reporting of incidents and other safety- related occurrences are implemented, that the reporting of incidents is encouraged and that such reports are reviewed to identify the need for any remedial action.

2.5.2.1.2 ***Operational and technical issues*** to ensure that:

a) The environmental working conditions meet established levels for temperature, humidity, ventilation, noise and ambient lighting, and do not adversely affect controller performance;

b) Automation systems generate and display flight plan, control and coordination data in a timely, accurate and easily recognizable manner and in accordance with human Factors principles;

Note – The ATS provider shall take into account relevant human factors aspects when designing or certifying equipment and operating procedures and when training and licensing personnel

c) Equipment, including input/output devices for automation systems, are designed and positioned in the working position in accordance with ergonomic principles;

d) Communications, navigation, surveillance and other safety significant systems and equipment;

i) are tested for normal operations on a routine basis;

ii) Meet the required level of reliability and availability as defined by the ATS provider and accepted by the Authority.

iii) Provide for timely and appropriate detection and warning of system failures and degradation;

iv) Include documentation on the consequences of system, sub-system and equipment failures and degradations;

v) Include measures to control the probability of failures and degradations; and

vi) Include back-up facilities and /or procedures in the event of a system failure or degradation; and

e) Detailed records of systems and equipment serviceability are kept and periodically reviewed.

f) Checklists and SOPs are developed and implemented in accordance with human factor principles.

Note – In the context above, the terms reliability and availability have the following meanings;

1) Reliability: the probability that a device or system will function without failure over a specified time period or amount of usage; and

2) Availability; the ration of the percentage of the time that a system is operating correctly to the total time in that period.

2.5.2.1.3 ***Licensing and training issues to ensure*** that:

a) Controllers are adequately trained and properly licensed with valid ratings;

b) Controller competency is maintained by adequate and appropriate refresher training, including the handling of aircraft emergencies and operations under conditions with failed and degraded facilities and systems;

c) Controllers, where the ATC unit/ control sector is staffed by teams, are provided relevant and adequate training in order to ensure efficient teamwork;

d) The implementation of new or amended procedures, and new or updated communications, surveillance and other safety significant systems and equipment is preceded by appropriate training and instructions;

e) Controller competency in the English language is satisfactory in relation to providing ATS to international air traffic; and

f) Standard phraseology is used.

2.6 Safety Risk Assessments

2.6.1 Need for safety risk assessments

2.6.1.1 The ATS provide shall carried out safety risk assessment in respect of proposals for significant airspace reorganizations, for significant changes in the provision of ATS procedures applicable to an airspace or an aerodrome, and for the introduction of new equipment, systems or facilities, such as;

a) A reduced separation minimum to be applied within an airspace or at an aerodrome;

b) A new operating procedure, including departure and arrival procedures, to be applied within an airspace or at an aerodrome;

c) A reorganization of an airspace;

d) A reorganization of the ATS route structure

e) Physical changes to the layout of runways and/ or taxiways at an aerodrome; and

f) Implementation of new communications, surveillance or other safety-significant systems and equipment, including those providing new functionality and /or capabilities.

Note. — When, due to the nature of the change, the acceptable level of safety cannot be expressed in quantitative terms, the safety assessment may rely on operational judgment

2.6.1.2 Proposals shall be implemented only when the assessment has shown that an acceptable level of safety will be met. When appropriate, the ATS provider shall ensure that adequate provision is made for post-implementation monitoring to verify that the defined level of safety continues to be met.

2.6.2 Safety- significant factors

The safety risk assessment shall consider relevant all factors determined to be safety-significant, including:

a) types of aircraft and their performance characteristics, including aircraft navigation capabilities and navigation performance;
b) traffic density and distribution;
c) airspace complexity, ATS route structure and classification of the airspace;
d) aerodrome layout, including runway configurations, runway lengths and taxiway configurations;
e) type of air-ground communications and time parameters for communication dialogues, including controller intervention capability;
f) Type and capabilities of surveillance system, and the availability of systems proving controller support and alert functions. Where ADS-B implementation envisages reliance upon a common source for surveillance and/or navigation, the safety assessment shall take account of adequate contingency measures to mitigate the risk of either degradation or loss of this common source (ie common mode failure); and
g) Any significant local or regional weather phenomena.

Note 1.— See also Chapter 5, Section 5.11, concerning reductions in separation minima.
Note 2.— Guidance material on methods of expressing and assessing a safety level and on safety monitoring programmes is contained in Annex 11, Attachment B, the Air Traffic Services Planning Manual (Doc 9426), the Manual on a 300 m (1 000 ft) Vertical Separation Minimum Between FL 290 and FL 410 Inclusive (Doc 9574), the Performance-based Navigation (PBN) Manual (Doc 9613) and the Manual on Airspace Planning Methodology for the Determination of Separation Minima (Doc 9689).

2.7 Safety- Enhancing Measures

2.7.1 The ATS provider shall assess and classify any actual or potential hazard related to the provision of ATS within airspace or at an aerodrome, whether identified through an ATS safety management activity or by any other means, for its risk acceptability.

2.7.2 Except when the risk in 2.7.1 above can be classified as acceptable, the ATS provider shall implement appropriate measures to eliminate the risk or reduce the risk to a level that is acceptable.

2.7.3 The ATS provider shall implement appropriate remedial measures if it becomes apparent that the level of safety applicable to an airspace or an aerodrome is not, or may not be achieved.

2.7.4 The ATS provider shall ensure that implementation of any remedial measure is followed by an evaluation of the effectiveness of the measure in eliminating or mitigating a risk.

2.8 Human Resources Management

2.8.1 The ATS provider shall ensure that human resources are properly managed with a view to minimizing their contribution to accident /incident in the provision of ATS services.

2.8.2 The ATS provider shall systematically address human resources management in the following key aspects:

(a) Management responsibilities and accountabilities
(b) Staff deployment;
(c) Operational watch rostering to reduce fatigue; and
(d) Operational support arrangments.

2.8.3 In line with regulation 22.090(d), the ATS provider shall

(a) document and define the method of determining staffing levels to ensure safe and efficient ATM operations.
(b) allocate sufficient number of properly licensed /rated staff to cover the published operating hours of ATC control units and plan the level of ATC staffing requirements taking into account the following factors:
   (i) Training requirements;
   (ii) Rest days or rest periods between shifts;
   (iii) Leave requirements;
   iv) Sick leave reserve;
   v) Traffic volume, pattern and trend; and
   vi) Mid- to long- term projection on the development of ATM systems.

vii) Minimum duration of non-duty period

viii) number of hours of a duty period

2.8.4 The ATS provider shall ensure that adequate operations support staff are trained and maintained to fill established positions of the organization so as to fulfill the necessary functions, such as technical support staff by providing them with adequate training and that their proficiency shall be checked on a recurrent basis and training records of each Technical staff shall be maintained.

2.8.5 The ATS provider shall develop and maintain;

(a) a training programme and training Plan that ensures that personnel are trained and competent to perform their duties including SMS

(b) a formal means for safety communication that:

(i) ensures personnel are aware of the SMS to a degree commensurate with their positions;

(ii) conveys safety-critical information;

(iii) Explains why particular safety actions are taken; and

(iv)Explains why safety procedures are introduced or changed

2.8.6 The ATS provider shall develop policies and procedures to enable recruitment and retention of adequate ATS staff

Chapter 3: ATS SYSTEM CAPACITY AND AIR TRAFFIC FLOW MANAGEMENT

3.1 Capacity Management

3.1.1 General

3.1.1.1 The ATS provider shall establish procedures to provide sufficient capacity to cater to both normal and peak traffic levels;

3.1.1.2 The ATS provider shall ensure that in implementing any measures to increase capacity, the safety levels are not jeopardized as required in part 30 of civil aviation regulations.

3.1.1.3 The ATS provider shall ensure that number of aircraft provided with an ATC service does not exceed that which can be safely handled by the ATC unit concerned under the prevailing circumstances.

3.1.1.4 ATS provider shall define the maximum number of flights which can be safely accommodated, therefore it shall assess and declare the ATC capacity for control areas, for control sectors within a control area and for aerodromes.

3.1.1.5 The ATS provider must ensure that ATC capacity is 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 converted into daily, monthly or annual values.

3.1.2 Capacity assessment

3.1.2.1 In assessing capacity values, factors to be taken into account should include, inter alia:

a) the level and type of ATS provided;

b) the structural complexity of the control area, the control sector 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 backup 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.

3.1.3 Regulation of ATC capacity and traffic volumes

3.1.3.1 Where traffic demand varies significantly on a daily or periodic basis, facilities and procedures may be implemented to vary the number of operational sectors or working positions to meet the prevailing and anticipated demand. Applicable procedures may be contained in local instructions.

3.1.3.2 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.

3.1.3.3 To ensure that safety is not compromised whenever the traffic demand in an airspace or at an aerodrome is forecast to exceed the available ATC capacity, the ATS provider shall establish and implement measures to regulate traffic volumes accordingly.

3.1.4 Enhancement of ATC capacity

3.1.4.1 The ATS provider shall:

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

3.1.4.2 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 ATS provider shall ensure, 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) may arrange for the FF-ICE planning service to be provided for more accurate and earlier demand assessment and for collaborative flight planning.

3.1.5 Flexible use of airspace

3.1.5.1 The ATS provider shall, 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.

3.2 Air Traffic Flow Management

3.2.1 General

3.2.1.1 The ATS provider shall establish and implement an air traffic flow management (ATFM) service for airspace where traffic demand at times exceeds the defined ATC capacity**.**

3.2.1.2 When the traffic demand exceeds, or is foreseen to exceed, the capacity of a particular sector or aerodrome, the responsible ATC unit shall advise the responsible ATFM unit, where such a unit is established, and other ATC units concerned.

3.2.2 Flow management procedures

ATFM should be carried out in three phases:

a) *strategic planning*, if the action is carried out more than one day before the day on which it will take effect.

Strategic planning is normally carried out well in advance, typically two to six months ahead;

b) *pre-tactical planning*, if the action is to be taken on the day before the day on which it will take effect;

c) *tactical operations*, if the action is taken on the day on which it will take effect.

3.2.3 Strategic planning

3.2.3.1 Strategic planning should be carried out in conjunction with ATC and the aircraft operators. It should consist of examining the demand for the forthcoming season, assessing where and when demand is likely to exceed the available ATC capacity and taking steps to resolve the imbalance by:

a) arranging with the ATC authority to provide adequate capacity at the required place and time;

b) re-routing certain traffic flows (traffic orientation);

c) scheduling or rescheduling flights as appropriate; and

d) identifying the need for tactical ATFM measures.

3.2.3.2 Where a traffic orientation scheme (TOS) is to be introduced, the routes should, as far as practicable, minimize the time and distance penalties for the flights concerned, and allow some degree of flexibility in the choice of routes, particularly for long-range flights.

3.2.3.3 When a TOS has been agreed, details should be published by all States concerned in a common format

3.2.4 Pre-tactical planning

Pre-tactical planning should entail fine-tuning of the strategic plan in the light of updated demand data. During this phase:

a) certain traffic flows may be re-routed;

b) off-load routes may be coordinated;

c) tactical measures will be decided upon; and

d) details for the ATFM plan for the following day should be published and made available to all concerned.

3.2.5 Tactical operations

3.2.5.1 Tactical ATFM operations should consist of:

a) executing the agreed tactical measures in order to provide a reduced and even flow of traffic where demand would otherwise have exceeded capacity;

b) monitoring the evolution of the air traffic situation to ensure that the ATFM measures applied are having the desired effect and to take or initiate remedial action when long delays are reported, including re-routing of traffic

and flight level allocation, in order to utilize the available ATC capacity to the maximum extent.

3.2.5.2 When the traffic demand exceeds, or is foreseen to exceed, the capacity of a particular sector or aerodrome, the responsible ATC unit shall advise the responsible ATFM unit, where such a unit is established, and other ATC units

concerned. Flight crews of aircraft planned to fly in the affected area and operators should be advised, as soon as practicable, of the delays expected or the restrictions which will be applied.

Note.— Operators known or believed to be concerned will normally be advised by the regional air traffic flow management service, when established.

3.2.6 Liaison

During all phases of ATFM the responsible units should liaise closely with ATC and the aircraft operators in order to ensure an effective and equitable service.

Note.— Attention is drawn to the guidance material contained in the Air Traffic Services Planning Manual *(Doc 9426) regarding flow control as well as to procedures contained in* the Regional Supplementary Procedures *(Doc 7030) and regional ATFM Handbooks.*

Chapter 4: GENERAL PROVISIONS FOR AIR TRAFFIC SERVICES

4.1 Responsibility for the Provision of Air Traffic Control Service

4.1.1 Area control service

a) Area control service shall be provided:

i) by an area control centre (ACC); or

ii) by the unit providing approach control service in a control zone or in a control area of limited extent which is designated primarily for the provision of approach control service, when no ACC is established.

4.1.2 Approach control service

a) Approach control service shall be provided:

i) by an aerodrome control tower or an ACC, when it is necessary or desirable to combine under the responsibility of one unit the functions of the approach control service and those of the aerodrome control service or the area control service; or

ii) by an approach control unit, when it is necessary or desirable to establish a separate unit.

Note. — Approach control service may be provided by a unit collocated with an ACC, or by a control sector within an ACC.

4.1.3 Aerodrome control service

a) Aerodrome control service shall be provided by an aerodrome control tower.

4.2 Responsibility for the Provision of Flight Information Service and Alerting Service

a) The ATS provide shall ensure that Flight information service and alerting service are provided as follows:

i) **within a flight information region (FIR*):*** by a flight information centre, unless the responsibility for providing such services is assigned to an air traffic control unit having adequate facilities for the exercise of such

responsibilities;

ii) **within controlled airspace and at controlled aerodromes***:* by the relevant air traffic control units.

4.3 Division of Responsibility for Control between Air Traffic Control Units

4.3.1 General

4.3.1.1 The ATS provider shall designate the area of responsibility for each air traffic control (ATC) unit and, when applicable, for individual control sectors within an ATC unit. Where there is more than one ATC working position within a unit or sector, the duties and responsibilities of the individual working positions shall be defined.

4.3.2 Between a unit providing aerodrome control service and a unit providing approach control service

4.3.2.1 Except for flights which are provided aerodrome control service only, the control of arriving and departing controlled flights shall be divided between units providing aerodrome control service and units providing approach control service as follows:

4.3.2.1.1 ***Arriving aircraft***. Control of an arriving aircraft shall be transferred from the unit providing approach control service to the unit providing aerodrome control service when the aircraft:

a) is in the vicinity of the aerodrome, and

i) it is considered that approach and landing will be completed in visual reference to the ground, or

ii) has reached uninterrupted visual meteorological conditions, or

b) is at a prescribed point or level, or

c) has landed,

as specified in letters of agreement or ATS unit instructions.

4.3.2.1.2 ***Departing aircraft***. Control of a departing aircraft shall be transferred from the unit providing aerodrome control service to the unit providing approach control service:

a) when visual meteorological conditions prevail in the vicinity of the aerodrome:

i) prior to the time the aircraft leaves the vicinity of the aerodrome,

ii) prior to the aircraft entering instrument meteorological conditions, or

iii) when the aircraft is at a prescribed point or level,

as specified in letters of agreement or ATS unit instructions;

b) when instrument meteorological conditions prevail at the aerodrome:

i) immediately after the aircraft is airborne, or

ii) when the aircraft is at a prescribed point or level,

as specified in letters of agreement or local instructions.

4.3.3 Between a unit providing approach control service and a unit providing area control service

4.3.3.1 When area control service and approach control service are not provided by the same air traffic control unit, responsibility for controlled flights shall rest with the unit providing area control service except that a unit providing approach control service shall be responsible for the control of:

a) arriving aircraft that have been released to it by the ACC;

b) departing aircraft until such aircraft are released to the ACC.

4.3.3.2 A unit providing approach control service shall assume control of arriving aircraft, provided such aircraft have been released to it, upon arrival of the aircraft at the point, level or time agreed for transfer of control, and shall maintain control during approach to the aerodrome.

4.3.4 Between two units providing area control service.

4.3.1 The ATS provider shall establish procedures to ensure that the responsibility for the control of an aircraft is transferred from a unit providing area control service in a control area to the unit providing area control service in an adjacent control area at the time of crossing the common control area boundary as estimated by the ACC having control of the aircraft or at such other point or time as has been agreed between the two units.

4.3.5 Between control sectors/positions within the same air traffic control unit

4.3.5.1 The ATS provider shall ensure that the responsibility for control of an aircraft is transferred from one control sector/position to another control sector/ position within the same air traffic control unit at a point, level or time, as specified in local instructions.

4.4 Flight Plan

4.4.1 General

4.4.1.1 The ATS provider shall ensure that all aircraft approvals related to its navigation performance in accordance with regulation 22.145 (e) (3) of civil aviation regulations are reflected in item 10 of flight plan.

4.4.2 The ATS provider shall establish procedures to ensure that an operator shall, prior to departure:

a) ensure that, where the flight is intended to operate on a route or in an area where a navigation specification is prescribed, it has an appropriate RNP approval, and that all conditions applying to that approval will be satisfied;

b) ensure that, where the flight is intended to operate in reduced vertical separation minimum (RVSM) airspace, it has the required RVSM approval;

c) ensure that, where the flight is intended to operate where an RCP specification is prescribed, it has an appropriate approval, and that all conditions applying to that approval will be satisfied.

d) ensure that, where the flight is intended to operate where an RSP specification is prescribed, it has an appropriate RSP approval, and that all conditions applying to that approval will be satisfied

4.4.2 Submission of a flight plan

4.4.2.1 Prior to Departure

4.4.2.1.1 The ATS provider shall ensure that Flight plans, except preliminary flight plans, are not submitted more than 120 hours before the estimated off-block time of a flight.

4.4.2.1.2 The ATS provider shall ensure that a flight plan submitted prior to departure shall be submitted to the air traffic services reporting office at the departure aerodrome or, when applicable, to any other unit(s) serving the departure aerodrome as prescribed by the ATS provider.

4.4.2.1.3 In the event of a delay of 30 minutes in excess of the estimated off-block time mentioned in 4.4.2.1.2 above, for a controlled flight or a delay of one hour for an uncontrolled flight for which a flight plan has been submitted, the flight plan may be amended or a new flight plan submitted and the old flight plan cancelled, whichever is applicable.

4.4.2.1.4 The first unit receiving a flight plan, or change thereto, 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 thereto, to the originator.

Note. — *The first unit may be an ATS reporting office at a departure aerodrome, an FF-ICE services unit or an ATS unit receiving a flight plan from an aircraft in flight.*

4.5 Air traffic control clearances

4.5.1 Scope and purpose

4.5.1.1 Regulation 22.365 requires the ATS provider in respect of an air traffic control service to establish procedures for the provision of ATC clearances.

4.5.1.2 The procedures mentioned in 4.5.1 above shall ensure that ATC units issue such ATC clearances purposely to prevent collisions and to expedite and maintain an orderly flow of air traffic.

4.5.1.3 The ATS provider shall ensure that 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.

4.5.1.4 The ATS provider must ensure that ATC clearances be issued early enough to ensure that they are transmitted to the aircraft in sufficient time for it to comply with them.

4.5.2 Aircraft subject to ATC for part of flight

4.5.2.1 The ATS provider shall establish procedures to ensure that when a flight plan specifies that the initial portion of a flight will be uncontrolled, and that the subsequent portion of the flight will be subject to ATC, the aircraft shall be advised to obtain its clearance from the ATC unit in whose area controlled flight will be commenced.

4.5.2.2 When a flight plan specifies that the first portion of a flight will be subject to ATC, and that the subsequent portion will be uncontrolled, the aircraft shall normally be cleared to the point at which the controlled flight terminates.

4.5.2.3 The ATS provider shall ensure that Standard departure and arrival routes and associated procedures are established when necessary to facilitate:

a) the safe, orderly and expeditious flow of air traffic;

b) the description of the route and procedure in air traffic control clearances

4.5.3 Flights through intermediate stops

4.5.3.1 The ATS provider shall ensure that when an aircraft files, at the departure aerodrome, flight plans for the various stages of flight through intermediate stops, the initial clearance limit will be the first destination aerodrome and new clearances shall be issued for each subsequent portion of flight.

4.5.4 Contents of clearances

4.5.4.1 The ATS provider shall establish procedures to ensure that Clearances contain positive and concise data and shall, as far as practicable, be phrased in a standard.

4.5.4.2 The ATS provider shall ensure that Clearances 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. — If the clearance for the levels covers only part of the route, it is important for the air traffic control unit to specify a point to which the part of the clearance regarding levels applies whenever necessary to ensure compliance with part 40 of civil aviation regularions.

4.5.5 Departing aircraft

The ATS provider shall ensure that ACC, except where procedures providing for the use of standard departure clearances have been implemented, forward a clearance to approach control units or aerodrome control towers with the least possible delay after receipt of request made by these units, or prior to such request if practicable.

4.5.6 En-route aircraft-General

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

4.5.6.2 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.

4.5.6.3 When so requested by the flight crew, an aircraft shall be cleared for cruise climb whenever traffic conditions and coordination procedures permit.

Such clearance in 4.5.6.3 above shall be for cruise climb either above a specified level or between specified levels.

4.5.7 Description of air traffic control clearances

4.5.7.1 Clearance Limit

4.5.7.1.1 The ATS provider shall ensure that a clearance limit be described by specifying the name of the appropriate significant point, or aerodrome, or controlled airspace boundary

4.5.7.1.2 When prior coordination has been effected with units under whose control the aircraft will subsequently come, or if there is reasonable assurance that it can be effected a reasonable time prior to their assumption of control, the clearance limit shall be the destination aerodrome or, if not practicable, an appropriate intermediate point, and coordination shall be expedited so that a clearance to the destination aerodrome may be issued as soon as possible.

4.5.7.1.3 When the destination aerodrome is outside controlled airspace, the ATC unit responsible for the last controlled airspace through which an aircraft will pass shall issue the appropriate clearance for flight to the limit of that controlled airspace

4.5.7.2 Route of Flight

4.5.7.2.1 The ATS provider shall establish procedure to ensure that the route of flight be detailed in each clearance when deemed necessary.

4.5.7.2.2 The ATS provider shall ensure that the phrase "cleared flight planned route" is not used when granting a re-clearance.

4.5.7.3 Levels

4.5.7.3.1 The ATS provider shall ensure that the use of standard departure and arrival clearances, instructions included in clearances relating to levels shall consist of the following items;

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.

4.5.7.4. Clearance of a requested change in flight plan

4.5.7.4.1 The ATS provider when issuing a clearance covering a requested change in route or level, the exact nature of the change shall be included in the clearance.

4.5.7.4.2 When traffic conditions will not permit clearance of a requested change, the word "UNABLE" shall be used.

4.5.7.4.3 When an alternative route is offered and accepted by the flight crew under the procedures described in 4.5.7.4.2, the amended clearance issued shall describe the route to the point where it joins the previously cleared route, or, if the aircraft will not re-join the previous route, to the destination.

4.5.7.5 Readback of Clearances

4.5.7.5.1 The ATS provider shall establish procedure to ensure that the flight crew 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 from, 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.

4.5.7.5.1.1 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.

4.5.7.5.2 The controller shall listen to the readback 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 readback.

4.5.7.5.2.1 Unless specified by the ATS provider, voice readback of controller-pilot data link communications (CPDLC) messages shall not be required.

4.6 Horizontal Speed Control Instructions

4.6.1 General

4.6.1.1. Speed control instructions remain in effect unless explicitly cancelled or amended by the controller.

4.6.1.2 Speed control shall not be applied to aircraft entering or established in a holding pattern

4.6.1.3 the ATS provider shall establish proceduresto ensure that the flight crew informs the ATC unit concerned if at any time they are unable to comply with a speed instruction.

4.6.1.4 In such cases in 4.6.1.3 above, the controller shall apply an alternative method to achieve the desired spacing between the aircraft concerned

4.6.1.5 The ATS provider shall ensure that an aircraft is advised when a speed control restriction is no longer required.

4.6.2 SID and STAR

4.6.2.1 The ATS provider shall establish procedures to ensure that the flight crew complies with published SID and STAR speed restrictions unless the restrictions are explicitly cancelled or amended by the controller.

4.7 Vertical Speed Control Instructions

4.7.1 The ATS provider shall establish procedures to ensure that the flight crew informs 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

4.7.2 The ATS provider shall ensure that Aircraft is advised when a rate of climb/descent restriction is no longer required

4.8 Change from IFR toVFR Flight

4.8.1 The ATS provider shall ensure that Change from instrument flight rules (IFR) flight to visual flight rules (VFR) flight is only acceptable when a message initiated by the pilot-in-

command containing the specific expression "CANCELLING MY IFR FLIGHT", together with the changes, if any, to be made to the current flight plan, and is received by an air traffic services unit. No invitation to change from IFR flight to VFR flight is to be made either directly or by inference.

4.8.2 The ATS provider shall ensure that an ATC unit receiving notification of an aircraft's intention to change from IFR to VFR flight, as soon as practicable thereafter, so informs all other ATS units to whom the IFR flight plan was addressed, except those units through whose regions or areas the flight has already passed.

4.9 Wake Turbulence Categories

4.9.1 Wake turbulence separation minima shall be based on a grouping of aircraft types into three categories according to the maximum certificated take-off mass as follows:

a) HEAVY (H) — all aircraft types of 136 000 kg or more;

b) MEDIUM (M) — aircraft types less than 136 000 kg but more than 7 000 kg; and

c) LIGHT (L) — aircraft types of 7 000 kg or less.

4.9.2 For aircraft in the heavy wake turbulence category the word "Heavy" shall be included immediately after the aircraft call sign in the initial radiotelephony contact between such aircraft and ATS units.

4.10 Altimeter Setting Procedures

4.10.1 Expression of vertical position of aircraft

4.10.1.1 For flights in the vicinity of aerodromes and within terminal control areas the vertical position of aircraft shall, except as provided for in 4.10.1.2, be expressed in terms of altitudes at or below the transition altitude and in terms of flight levels at or above the transition level. while passing through the transition layer, vertical position shall be expressed in terms of flight levels when climbing and in terms of altitudes when descending.

4.10.1.2 When an aircraft which has been given clearance to land is completing its approach using atmospheric pressure at aerodrome elevation (QFE), the vertical position of the aircraft shall be expressed in terms of height above aerodrome elevation during that portion of its flight for which QFE may be used, except that it shall be expressed in terms of height above runway threshold elevation:

a) For instrument runways, if the threshold is 2 m (7 ft) or more below the aerodrome elevation; and

b) For precision approach runways.

4.10.1.3 The ATS provider shall ensure that for flights en route, the vertical position of aircraft shall be expressed in terms of:

a) Flight levels at or above the lowest usable flight level; and

b) Altitudes below the lowest usable flight level;

Except where, on the basis of regional air navigation agreements, a transition altitude has been established for a specified area, in which case the provisions of 4.10.1.1 shall apply.

4.10.2 Determination of the transition level

4.10.2.1 The ATS provider shall establish the transition level to be used in the vicinity of the aerodrome(s) concerned and, when relevant, the terminal control area (TMA) concerned, for the appropriate period of time on the basis of QNH (altimeter subscale setting to obtain elevation when on the ground) reports and forecast mean sea level pressure, if required.

4.10.2.2 The transition level shall be the lowest flight level available for use above the transition altitude established for the aerodrome(s) concerned. Where a common transition altitude has been established for two or more aerodromes which are so closely located as to require coordinated procedures, the ATS provider shall establish a common transition level to be used at any given time in the vicinity of the aerodrome and, when relevant, in the TMA concerned.

4.10.3 Minimum cruising level for IFR flights

4.10.3.1 Except when specifically authorized by the authority, cruising levels below the minimum flight altitudes established shall not be assigned.

4.10.3.2 The ATS provider 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, use it when assigning flight levels and pass it to pilots on request.

4.10.3.3 The ATS provider shall at all times have available for transmission to aircraft in flight, on request, the information required to determine the lowest flight level which will ensure adequate terrain clearance on routes or segments of routes for which this information is required.

4.10.3.4 Flight information centres/ACCs or Approach control unit, whichever is available shall have available for transmission to aircraft, on request, an appropriate number of QNH reports or forecast pressures for the FIRs and control areas for which they are responsible, and for those adjacent.

4.10.3.5 The ATS provider shall ensure that the flight crew be provided with the transition level in due time prior to reaching it during descent. This may be accomplished by voice communications, ATIS broadcast or data link.

4.10.3.6 The ATS provider shall ensure that transition level be included in approach clearances when so prescribed by the appropriate authority or requested by the pilot.

4.10.3.7 A QNH altimeter setting shall be included in the descent clearance when first cleared to an altitude below the transition level, in approach clearances or clearances to enter the traffic circuit, and in taxi clearances for departing aircraft, except when it is known that the aircraft has already received the information.

4.10.3.8 A QFE altimeter setting shall be provided to aircraft on request or on a regular basis in accordance with local arrangements; it shall be the QFE for the aerodrome elevation except for:

a) Non-precision approach runways, if the threshold is 2 m (7 ft) or more below the aerodrome elevation; and

b) Precision approach runways;

in which cases the QFE for the relevant runway threshold shall be provided.

4.10.3.9 Altimeter settings provided to aircraft shall be rounded down to the nearest lower whole hectopascal

4.11 Position Reporting

4.11.1 Transmission of position reports

4.11.1.1 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 4.11.1.3 and 4.11.3.

4.11.1.2 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 4.11.1.3.

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

4.11.1.4 The position reports required by 4.11.1.1 and 4.11.1.2 shall be made to the ATS unit serving the airspace in which the aircraft is operated. In addition, when so prescribed by the ATS provider in aeronautical information publications or requested by the appropriate ATS unit, the last position report before passing from one FIR or ontrol area to an adjacent FIR or control area shall be made to the ATS unit serving the airspace about to be entered.

4.11.1.5 The ATS provider shall ensure that 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. 4.11.1.6 in such situation as above in 4.11.1.5, the ATS providere shall ensure that immediate action is taken to obtain the report if it is likely to have any bearing on the control of other aircraft.

4.11.2 Contents of voice position reports

4.11.2.1 The position reports required by 4.11.1.1 and 4.11.1.2 shall contain the following elements of information, except that elements d), e) and f) may be omitted from position reports transmitted by radiotelephony, when so prescribed on the basis of regional air navigation agreements:

a) Aircraft identification;

b) Position;

c) Time;

d) Flight level or altitude, including passing level and cleared level if not maintaining the cleared level;

e) Next position and time over; and

f) Ensuing significant point.

4.11.2.1.1 Element d), flight level or altitude, shall, however, be included in the initial call after a change of air-ground voice communication channel.

4.11.2.2 The ATS provider shall establish procedures to ensure that 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.

4.11.2.3 When so prescribed by the appropriate ATS authority, the initial call to an ATC unit after a change of air-ground voice communication channel shall contain the following elements:

a) Designation of the station being called;

b) Call sign and, for aircraft in the heavy wake turbulence category, the word “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 the appropriate ATS authority.

4.11.3 Transmission of ADS-C reports

4.11.3.1 The ATS provider shall ensure that the position reports be made automatically to the ATS unit serving the airspace in which the aircraft is operating, if applicable. The requirements for the transmission and contents of automatic dependent surveillance — contract (ADS-C) reports shall be established by the controlling ATC unit on the basis of current operational conditions and communicated to the aircraft and acknowledged through an ADS-C agreement.

4.11.4 Contents of ADS-C reports

4.11.4.1 The ATS provider shall ensure that ADS-C reports, if applicable be composed of data blocks selected from the following:

a) Aircraft identification

b) Basic ADS-C

latitude

longitude

altitude

time

figure of merit

c) Ground vector

track

ground speed

rate of climb or descent

d) Air vector

heading

Mach or IAS

rate of climb or descent

e) Projected profile

next waypoint

estimated altitude at next waypoint

estimated time at next waypoint

(next + 1) waypoint

estimated altitude at (next + 1) waypoint

estimated time at (next + 1) waypoint

f) Meteorological information

wind speed

wind direction

wind quality flag (if available)

temperature

turbulence (if available)

humidity (if available)

g) Short-term intent

latitude at projected intent point

longitude at projected intent point

altitude at projected intent point

time of projection

If an altitude, track or speed change is predicted to occur between the aircraft's current position and the projected intent point, additional information would be provided in an intermediate intent block as follows:

- distance from current point to change point
- track from current point to change point
- altitude at change point
- predicted time to change point

4.11.4.2 The basic ADS-C data block shall be required from all ADS-C-equipped aircraft where applicable. Remaining ADS-C data blocks shall be included as necessary. In addition to any requirements concerning its transmission for ATS purposes, data block f) (Meteorological information) shall be transmitted in accordance with Annex 3, 5.3.1. ADS-C emergency and/or urgency reports shall include the emergency and/or urgency status in addition to the relevant ADS-C report information.

4.11.5 Data format of ADS-B messages

Note. — Data formats of ADS-B messages can be found in RCATS-CNS -Aeronautical Telecommunications, Volume III — Communication Systems, Part I — Digital Data Communication Systems, and Volume IV — Surveillance and Collision Avoidance Systems.

4.12 Reporting of Operational and Meteorological Information

4.12.1 General

4.12.1.1 When operational and/or routine meteorological information is to be reported, using data link, by an aircraft en route at times where position reports are required in accordance with 4.11.1.1 and 4.11.1.2, the position report shall be given in accordance with 4.11.4.2 (requirements concerning transmission of meteorological information from ADS-C equipped

aircraft), or in the form of a routine air-report. Special aircraft observations shall be reported as special air-reports. All air-reports shall be reported as soon as is practicable.

4.12.2 Contents of routine air-reports

4.12.2.1 Routine air-reports transmitted by data link, when ADS-C is not being applied, shall give information relating to such of the following elements as are necessary for compliance with 4.12.2.2:

Section 1. — Position information:

a. Aircraft identification
b. Position
c. Time
d. Flight level or altitude
e. Next position and time over
f. Ensuing significant point

Section 2. — Operational information:

g. Estimated time of arrival
h. Endurance

Section 3. — Meteorological information:

i. Wind direction
j. Wind speed
k. Wind quality flag
l. Air temperature
m. Turbulence (if available)
n. Humidity (if available).

4.12.2.2 Section 1 of the air-report is obligatory, except that elements 5) and 6) thereof may be omitted when so prescribed on the basis of regional air navigation agreements. Section 2 of the air-report, or a portion thereof, shall only be transmitted when so requested by the operator or a designated representative, or when deemed necessary by the pilot-in-command. Section 3 of the air-report shall be transmitted in accordance with part 24 of civil aviation regulations.

Note. — While element 4), flight level or altitude, may, in accordance with 4.12.2.1, be omitted from the contents of a position report transmitted by radiotelephony when so prescribed on the basis of regional air navigation agreements, that element may not be omitted from Section 1 of an air-report.

4.12.3 Contents of special air-reports

4.12.3.1 The ATS provider shall establish procedures to ensure that Special air-reports be made by all aircraft whenever the following conditions are encountered or observed:

a) Moderate or severe turbulence; or

b) Moderate or severe icing; or

c) Severe mountain wave; or

d) Thunderstorms, without hail that are obscured, embedded, widespread or in squall lines; or

e) Thunderstorms, with hail that are obscured, embedded, widespread or in squall lines; or

f) Heavy duststorm or heavy sandstorm; or

g) Volcanic ash cloud; or

h) Pre-eruption volcanic activity or a volcanic eruption; or

i) runway braking action encountered is not as good as reported.

Note. — Pre-eruption volcanic activity in this context means unusual and/or increasing volcanic activity which could presage a volcanic eruption.

In addition, in the case of transonic and supersonic flight:

i) Moderate turbulence; or

j) Hail; or

k) Cumulonimbus clouds.

4.12.3.2 When air-ground data link is used, special air-reports shall contain the following elements:

- message type designator
- aircraft identification

Data block 1:

Latitude

Longitude

Pressure-altitude

Time

Data block 2:

Wind direction

Wind speed

Wind quality flag

Air temperature

Turbulence (if available)

Humidity (if available)

Data block 3:

Condition prompting the issuance of the special air-report; to be selected from the list a) to k) presented under 4.12.3.1

4.12.3.3 When voice communications are used, special air-reports shall contain the following elements:

Message type designator

Section 1. — Position information

a. Aircraft identification
b. Position
c. Time
d. Flight level or altitude

Section 3. — Meteorological information

e. Condition prompting the issuance of the special air-report; to be selected from the list a) to k) presented under 4.12.3.1.

4.12.4 Compilation and transmission of air-reports by voice communications

4.12.4.1 ATS provider shall ensure that forms based on the model AIREP SPECIAL form at **Appendix 5** shall be provided for the use of flight crews in compiling the reports. The detailed instructions for reporting, as given at **Appendix 5**, shall be complied with.

4.12.4.2 The ATS provider shall ensure that the detailed instructions, including the formats of messages and the phraseologies given at **Appendix 5**, shall be used by flight crews when transmitting air-reports and by air traffic services units when retransmitting such reports.

Note. — Increasing use of air-reports in automated systems makes it essential that the elements of such reports be transmitted in the order and form prescribed.

4.12.5 Recording of special air-reports of volcanic activity

4.12.5.1 The ATS provider shall ensure that Special air-reports containing observations of volcanic activity shall be recorded on the special air-report of volcanic activity form. Forms based on the model form for special air-reports of volcanic activity at **Appendix 5** shall be provided for flight crews operating on routes which could be affected by volcanic ash clouds.

Note. — The recording and reporting instructions may conveniently be printed on the back of the special air-report of volcanic activity form.

4.12.6 Forwarding of meteorological information

4.12.6.1 When receiving special air-reports by data link communications, air traffic services units shall forward them without delay to their associated meteorological watch office, who will distribute it to the relevant offices/centers where applicable.

4.12.6.2 When receiving special air-reports by voice communications, air traffic services units shall forward them without delay to their associated meteorological watch offices, with the exception of conditions applying to runway braking action encountered.

4.12.7 Forwarding of braking action information

4.12.7.1 The ATS provider when receiving special air-reports by voice communications concerning braking action encountered that is not as good as reported, air traffic service units shall forward them without delay to the appropriate aerodrome operator.

4.13 Presentation and Updating of flight Plan and Control Data

4.13.1 General

4.13.1.1 The ATS provider shall establish processes and procedures to ensure that presentation to controllers is made, and subsequent updating, of flight plan and control data for all flights being provided with a service by an ATS unit. The procedures shall also allow for the presentation of any other information required or desirable for the provision of ATS.

4.13.2 Information and data to be presented

4.13.2.1 The ATS provider shall ensure that sufficient information and data 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. 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.

4.13.2.2 The ATS provider shall ensure that an appropriate representation of the airspace configuration, including significant points and information related to such points be provided. Data to be presented shall include relevant information from flight plans and position reports as well as clearance and coordination data. The information display may be generated and updated automatically, or the data may be entered and updated by authorized personnel.

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

4.13.3 Presentation of information and data

4.13.3.1 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.

4.13.3.2 The method(s) of presenting information and data shall be in accordance with Human Factors principles. The ATS provider shall ensure that all data, including data related to individual aircraft, shall be presented in a manner minimizing the potential for misinterpretation or misunderstanding.

4.13.3.3 The ATS provider shall ensure that Means and methods for manually entering data in ATC automation systems shall be in accordance with Human Factors principles.

4.13.3.4 The ATS provider shall ensure that the number of Flight progress strips (FPS) for individual flights be sufficient to meet the requirements of the ATS unit 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 ATS provider.

4.13.3.5 The ATS provider shall ensure that data generated automatically 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 flights, or until terminated by the controller

4.13.4 Recording and retention of data for investigative purposes

4.13.4.1The ATS provider shall ensure that Paper FPS be retained for a period of at least 90 days. Electronic flight progress and coordination data shall be recorded and retained for at least the same period of time.

4.14 Failure or Irregularity of Systems and Equipment

4.14.1 The ATS provider shall eshablish procedures to ensure that ATC units immediately report in accordance with locally agreed arrangements any failure or irregularity of communication, navigation and surveillance systems or any other safety-significant systems or equipment which could adversely affect the safety or efficiency of flight operations and/or the provision of air traffic control service.

4.15 Data Link Communications Initiation Procedures

4.15.1 General

Note 1. — Provisions concerning the data link initiation capability (DLIC) are contained in RCATS- Aeronautical Telecommunication, Volume II

Note 2. — Guidance material relating to the implementation of DLIC can be found in the Global *Operational Data* Link (GOLD) Manual *(Doc 10037).*

4.15.1.1 Before entering an airspace where data link applications are used by the ATS unit, data link communications shall be initiated between the aircraft and the ATS unit in order to register the aircraft and, when necessary, allow the start of a data link application.

4.15.1.2 The ATS provider shall ensure that the initiation in 4.15.1.1 above is initiated by the aircraft, either automatically or by the pilot, or by the ATS unit on address forwarding.

4.15.1.3 The logon address associated with an ATS unit shall be published in Aeronautical Information Publications in accordance with Part 25 of civil aviation regulations.

4.15.2 Aircraft initiation

4.15.2.1 The ATS provider shall establish procedures to ensure that on receipt of a valid data link initiation request from an aircraft approaching or within a data link service area, the ATS unit shall accept the request and, if able to correlate it with a flight plan, shall establish a connection with the aircraft.

4.15.3 ATS unit forwarding

4.15.3.1 The ATS provider shall ensure that where the ground system initially contacted by the aircraft is able to pass the necessary aircraft address information to another ATS unit, it shall pass the aircraft updated ground addressing information for data link applications previously coordinated in sufficient time to permit the establishment of data link communications

4.15.4 Data Link Communications Initiation Failure

4.15.4.1 The ATS provider shall establish procedures to ensure that in the case of a data link initiation failure, the data link system shall provide an indication of the failure to the appropriate ATS unit(s). The data link system shall also provide an indication of the failure to the flight crew when a data link initiation failure results from a logon initiated by the flight crew.

4.15.4.2 The ATS unit shall establish procedures to resolve, as soon as practicable, data link initiation failures.

4.15.4.3 The ATS provider shall establish procedures to ensure that the aircraft operator establish procedures to resolve, as soon as practicable, data link initiation failures.

Chapter 5: SEPARATION METHODS AND MINIMA

5.1 Provisions for the Separation of Controlled Traffic

5.1.1 General

5.1.1.1 The ATS provider shall ensure that separation minima are selected from those prescribed in the provisions of Air Navigation Services — Air Traffic Management (PANS-ATM) and Regional Supplementary Procedures (SUPPS).

5.1.1.2 Vertical or horizontal separation shall be provided:

a) between all flights in Class A and B airspaces;

b) between IFR flights in Class C, D and E airspaces;

c) between IFR flights and VFR flights in Class C airspace;

d) between IFR flights and special VFR flights; and

e) between special VFR flights, when so prescribed by the ATS provider;

except, for the cases under b) above in airspace Classes D and E, during the hours of daylight when flights have been cleared to climb or descend subject to maintaining own separation and remaining in visual meteorological conditions.

5.1.1.3 The ATS provider shall ensure that no clearance is given to execute any manoeuvre that would reduce the spacing between two aircraft to less than the separation minimum applicable in the circumstances.

5.1.1.4 The ATS provider shall ensure that where the type of separation or minimum used to separate two aircraft cannot be maintained, another type of separation or another minimum shall be established prior to the time when the current separation minimum would be infringed.

5.1.2 Degraded aircraft performance

5.1.2.1 The ATS provider shall establish procedures to ensure that the flight crew advises the ATC unit concerned without delay, 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.

5.1.2.2 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.

Note. — Unlawful interference with an aircraft constitutes a case of exceptional circumstances which might require the application of separations larger than the specified minima, between the aircraft being subjected to unlawful interference and other aircraft.

5.2.1 Vertical separation application

5.2.1.1 Vertical separation is obtained by requiring aircraft using prescribed altimeter setting procedures to operate at different levels expressed in terms of flight levels or altitudes in accordance with the provisions in Chapter 4, Section 4.10. of this manual

5.2.2 Vertical separation minimum

5.2.2.1 The vertical separation minimum (VSM) shall be:

a) a nominal 300 m (1 000 ft) below FL 290 and a nominal 600 m (2 000 ft) at or above this level, except as provided for in b) below; and

b) within designated airspace, subject to a regional air navigation agreement: a nominal 300 m (1 000 ft) below FL 410 or a higher level where so prescribed for use under specified conditions, and a nominal 600 m (2 000 ft) at or above this level.

Note. — Guidance material relating to vertical separation is contained in the Manual on a 300 m (1 000 ft) Vertical Separation Minimum Between FL 290 and FL 410 Inclusive (Doc 9574).

5.2.3 Assignment of cruising levels for controlled flights

5.2.3.1 The ATS provider shall ensure that an ATC unit normally authorizes only one 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, except when traffic conditions and coordination procedures permit authorization of cruise climb. It is the responsibility of the accepting ATC unit to issue clearance for further climb as appropriate.

5.2.3.2 Aircraft authorized to employ cruise climb techniques shall be cleared to operate between two levels or above a level.

5.2.3.3 If it is necessary to change the cruising level of an aircraft operating along an established ATS route extending partly within and partly outside controlled airspace and where the respective series of cruising levels are not identical, the change shall, whenever possible, be effected within controlled airspace.

5.2.3.4 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 destination.

5.2.3.5 The ATS provider shall ensure that an aircraft at a cruising level normally have priority over other aircraft requesting that cruising level. When two or more aircraft are at the same cruising level, the preceding aircraft shall normally have priority.

5.2.3.6 The ATS provider shall ensure that cruising levels, or, in the case of cruise climb, the range of levels, to be assigned to controlled flights shall be selected from those allocated to IFR flights in:

a) the tables of cruising levels in Appendix1 to 40.055 of acivil aviation regulations; or

b) a modified table of cruising levels, when so prescribed in accordance with Appendix1 to 40.055 of civil aviation regulations for flights above FL 410;

except that the correlation of levels to track as prescribed therein shall not apply whenever otherwise indicated in air traffic control clearances or specified by the appropriate ATS authority in AIPs.

5.2.4 Vertical separation during climb or descent

5.2.4.1 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;

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;

in which case such clearance shall be withheld until the aircraft vacating the level has reported at or passing another level separated by the required minimum.

5.2.4.1.1 When the aircraft concerned are entering or established in the same holding pattern, consideration shall be given to aircraft descending at markedly different rates and, if necessary, additional measures such as specifying a maximum descent rate for the higher aircraft and a minimum descent rate for the lower aircraft should be applied to ensure that the required separation is maintained.

5.3 Horizontal Separation

5.3.1 Lateral separation

5.3.1.1 Lateral Separation Application

5.3.1.1.1 Lateral separation shall be applied so that the distance between those portions of the intended routes for which the aircraft are to be laterally separated is never less than an established distance to account for navigational inaccuracies plus a specified buffer. This buffer shall be determined by the appropriate authority and included in the lateral separation minima as an integral part thereof.

5.3.1.1.2 When information is received indicating navigation equipment failure or deterioration below the navigation performance requirements, ATC shall then, as required, apply alternative separation methods or minima.

5.3.1.1.3 Where a route flown by an aircraft involves a specified turn which will result in the minimum lateral separation being infringed, another type of separation or another minimum shall be established prior to the aircraft commencing the turn

5.3.1.1.4 The ATS provider shall ensure that before applying GNSS-based track separation, the controller shall confirm the following:

a) ensure that the aircraft is navigating using GNSS; and

b) in airspace where, strategic lateral offsets are authorized, that a lateral offset is not being applied

5.3.1.1.5 The ATS provider shall ensure that GNSS-based track separation shall not be applied in cases of pilot-reported receiver autonomous integrity monitoring (RAIM) outages.

5.3.1.1.6 Lateral separation between aircraft using different navigation aids, or when one aircraft is using RNAV equipment, shall be established by ensuring that the derived protected airspaces for the navigation aid(s) or RNP do not overlap.

5.4 Time-based wake Turbulence Longitudinal Separation Minima

5.4.1 Applicability

5.4.1.1 The ATC unit concerned shall not be required to apply wake turbulence separation:

a) for arriving VFR flights landing on the same runway as a preceding landing SUPER, HEAVY or MEDIUM aircraft; and

b) between arriving IFR flights executing visual approach when the aircraft has reported the preceding aircraft in sight and has been instructed to follow and maintain own separation from that aircraft.

5.4.1.2 The ATC unit shall, in respect of the flights specified in 5.4.1.1 a) and b), as well as when otherwise deemed necessary, issue a caution of possible wake turbulence. 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 ATC unit accordingly, stating their requirements.

5.4.2 Arriving aircraft

5.4.2.1 Except as provided for in 5.4.1.1 a) and b), the following minima shall be applied to aircraft landing behind a SUPER, a HEAVY or a MEDIUM aircraft:

a) HEAVY aircraft landing behind SUPER aircraft — 2 minutes;

b) MEDIUM aircraft landing behind SUPER aircraft — 3 minutes;

c) MEDIUM aircraft landing behind HEAVY aircraft — 2 minutes;

d) LIGHT aircraft landing behind SUPER aircraft — 4 minutes;

e) LIGHT aircraft landing behind a HEAVY or MEDIUM aircraft — 3 minutes.

5.4.3 Departing aircraft

5.4.3.1When using wake turbulence categories contained in Chapter 4, 4.9.1 and when the aircraft are using the same runway the following minimum separations shall be applied:

a) HEAVY aircraft taking off behind a SUPER aircraft — 2 minutes;

b) LIGHT or MEDIUM aircraft taking off behind a SUPER aircraft — 3 minutes;

c) LIGHT or MEDIUM aircraft taking off behind a HEAVY aircraft — 2 minutes;

d) LIGHT aircraft taking off behind a MEDIUM aircraft — 2 minutes.

5.4.4 Opposite direction

5.4.4.1 When using wake turbulence categories contained in Chapter 4, 4.9.1for a heavier aircraft making a low or missed approach and when the lighter aircraft is:

a) using an opposite-direction runway for take-off or

b) landing on the same runway in the opposite direction, the following minimum separations shall be used:

1) between a HEAVY aircraft and a SUPER aircraft — 3 minutes;

2) between a LIGHT or MEDIUM aircraft and a SUPER aircraft — 4 minutes;

3) between a LIGHT or MEDIUM aircraft and a HEAVY aircraft — 3 minutes;

4) between a LIGHT aircraft and a MEDIUM aircraft — 3 minutes.

5.5 Clearances to Fly Maintaining own Separation while in Visual Meteorological Conditions

5.5.1 When so requested by an aircraft and provided it is agreed by the pilot of the other aircraft and so authorized by the ATS provider, an ATC unit may clear a controlled flight, including departing and arriving flights, operating in airspace Classes D and E in visual meteorological conditions during the hours of daylight to fly subject to maintaining own separation to one other aircraft and remaining in visual meteorological conditions, the following shall apply:

a) the clearance shall be for a specified portion of the flight at or below 3 050 m (10 000 ft), during climb or descent and subject to further restrictions as and when prescribed on the basis of regional air navigation agreements;

b) if there is a possibility that flight under visual meteorological conditions may become impracticable, an IFR flight shall be provided with alternative instructions to be complied with in the event that flight in visual meteorological conditions (VMC) cannot be maintained for the term of the clearance;

c) the pilot of an IFR flight, on observing that conditions are deteriorating and considering that operation in VMC will become impossible, shall inform ATC before entering instrument meteorological conditions (IMC) and shall proceed in accordance with the alternative instructions given.

5.6 Essential Traffic Information

5.6.1 General

5.6.1.1 Essential traffic is that controlled traffic to which the provision of separation by ATC is applicable, but which, in relation to a particular controlled flight is not, or will not be, separated from other controlled traffic by the appropriate separation minimum.

5.6.1.2 The ATS provider shall ensure essential traffic information shall be given to controlled flights concerned whenever they constitute essential traffic to each other.

5.6.2 Information to be provided

Essential traffic information shall include:

a) direction of flight of aircraft concerned;

b) type and wake turbulence category (if relevant) of aircraft concerned;

c) cruising level of aircraft concerned; and

1) estimated time over the reporting point nearest to where the level will be crossed; or

2) relative bearing of the aircraft concerned in terms of the 12-hour clock as well as distance from the conflicting traffic; or

3) actual or estimated position of the aircraft concerned.

Chapter 6: SEPARATION IN THE VICINITY OF AERODROMES

6.1 Essential Local Traffic

6.1.1 The ATS provider shall ensure that Information on essential local traffic known to the controller shall be transmitted without delay to departing and arriving aircraft concerned.

Note 1. — Essential local traffic in this context consists of any aircraft, vehicle or personnel on or near the runway to be used, or traffic in the take-off and climb-out area or the final approach area, which may constitute a collision hazard to a departing or arriving aircraft.

6.2 Procedures for Departing Aircraft

6.2.1 General

6.2.1.1 The ATS provider shall ensure that clearances for departing aircraft shall specify, when necessary for the separation of aircraft, direction of take-off and turn after take-off; heading or track to be made good before taking up the cleared departure track; level to maintain before continuing climb to assigned level; time, point and/or rate at which a level change shall be made; and any other necessary manoeuvre consistent with safe operation of the aircraft.

6.2.2 Standard clearances for departing aircraft.

6.2.2.1 Coordination

6.2.2.1.1 The ATS provider shall ensure that Provision shall be made to ensure that the approach control unit at all times is kept informed of the sequence in which aircraft will depart as well as the runway to be used.

6.2.2.1.2 The ATS provider shall ensure that Provision shall be made to display the designators of assigned SIDs to the aerodrome control tower, the approach control unit and/or the ACC as applicable

6.2.2.2 Contents

Standard clearances for departing aircraft shall contain the following items:

a) aircraft identification;

b) clearance limit, normally destination aerodrome;

c) designator of the assigned SID, if applicable;

d) cleared level;

e) allocated SSR code;

f) any other necessary instructions or information not contained in the SID description, e.g. instructions relating to change of frequency.

6.2.2.3 Clearances on a Sid

6.2.2.3.1 Clearances to aircraft on a SID with remaining published level and/or speed restrictions shall indicate if such restrictions are to be followed or are cancelled. The following phraseologies shall be used with the following meanings:

a) CLIMB VIA SID TO (level):

i) climb to the cleared level and comply with published level restrictions;

ii) follow the lateral profile of the SID; and

iii) comply with published speed restrictions or ATC-issued speed control instructions as applicable.

b) CLIMB VIA SID TO (level), CANCEL LEVEL RESTRICTION(S):

i) climb to the cleared level; published level restrictions are cancelled;

ii) follow the lateral profile of the SID; and

iii) comply with published speed restrictions or ATC-issued speed control instructions as applicable.

c) CLIMB VIA SID TO (level), CANCEL LEVEL RESTRICTION(S) AT (point(s)):

i) climb to the cleared level; published level restriction(s) at the specified point(s) are cancelled;

ii) follow the lateral profile of the SID; and

iii) comply with published speed restrictions or ATC-issued speed control instructions as applicable.

d) CLIMB VIA SID TO (level), CANCEL SPEED RESTRICTION(S):

i) climb to the cleared level and comply with published level restrictions;

ii) follow the lateral profile of the SID; and

iii) published speed restrictions and ATC-issued speed control instructions are cancelled.

e) CLIMB VIA SID TO (level), CANCEL SPEED RESTRICTION(S) AT (point(s)):

i) climb to the cleared level and comply with published level restrictions;

ii) follow the lateral profile of the SID; and

iii) published speed restrictions are cancelled at the specified point(s).

f) CLIMB UNRESTRICTED TO (level) or CLIMB TO (level), CANCEL LEVEL AND SPEED

RESTRICTION(S):

i) climb to the cleared level; published level restrictions are cancelled;

ii) follow the lateral profile of the SID; and

iii) published speed restrictions and ATC-issued speed control instructions are cancelled.

6.2.2.3.2 When a departing aircraft is cleared to proceed direct to a published waypoint on the SID, the speed and level restrictions associated with the bypassed waypoints are cancelled. All remaining published speed and level restrictions shall remain applicable.

6.2.2.3.3 When a departing aircraft is vectored or cleared to proceed to a point that is not on the SID, all the published speed and level restrictions of the SID are cancelled and the controller shall:

a) reiterate the cleared level;

b) provide speed and level restrictions as necessary; and

c) notify the pilot if it is expected that the aircraft will be instructed to subsequently rejoin the SID.

6.2.2.3.4 ATC instructions to an aircraft to rejoin a SID shall include:

a) the designator of the SID to be rejoin, unless advance notification of rejoin has been provided in accordance with 6.2.2.3.1;

b) the cleared level in accordance with 6.3.2.4.1; and

c) the position at which it is expected to rejoin the SID.

6.2.3 Departure sequence

6.2.3.1 If departures are delayed, the delayed flights shall normally be cleared in an order based on their estimated time of departure, except that deviation from this order may be made to:

a) facilitate the maximum number of departures with the least average delay;

b) accommodate requests by an operator in respect of that operator's flights to the extent practicable

6.3 Information for Departing Aircraft

6.3.1 Meteorological conditions

The ATS provider shall ensure that Information regarding significant changes in the meteorological conditions in the take-off or climb-out area, obtained by the unit providing approach control service after a departing aircraft has established communication with such unit, shall be transmitted to the aircraft without delay, except when it is known that the aircraft already has received the information.

Note.— Significant changes in this context include those relating to surface wind direction or speed, visibility, runway visual range or air temperature (for turbine-engined aircraft), and the occurrence of thunderstorm or

cumulonimbus, moderate or severe turbulence, wind shear, hail, moderate or severe icing, severe squall line, freezing precipitation, severe mountain waves, sandstorm, duststorm, blowing snow, tornado or waterspout.

6.3.2 Operational status of visual or non-visual aids

6.3.2.1 The ATS provider shall establish procedures to ensure that Information regarding changes in the operational status of visual or non-visual aids essential for take-off and climb is transmitted without delay to a departing aircraft, except when it is known that the aircraft already has received the information.

6.4 Procedures for Arriving Aircraft

6.4.1 General

6.4.1.1 The ATS provider shall ensure that when it becomes evident that delays will be encountered by arriving aircraft, operators or designated representatives shall, to the extent practicable, be notified and kept currently informed of any changes in such expected delays.

6.4.1.2 The ATS provider shall ensure that an IFR flight shall not be cleared for an initial approach below the appropriate minimum altitude as specified in the AIP nor to descend below that altitude unless:

a) the pilot has reported passing an appropriate point defined by a navigation aid or as a waypoint; or

b) the pilot reports that the aerodrome is and can be maintained in sight; or

c) the aircraft is conducting a visual approach; or

d) the controller has determined the aircraft's position by the use of an ATS surveillance system, and a lower minimum altitude has been specified for use when providing ATS surveillance services.

6.4.2 Standard clearances for arriving aircraft

6.4.2.1 Coordination

6.4.2.1.1 The ATS provider shall ensure that the approach control unit is at all times kept informed of the sequence of aircraft following the same STAR.

6.4.2.1.2 The ATS provider shall ensure that provision shall be made to display the designators of assigned STARs to the ACC, the approach control unit and/or the aerodrome control tower, as applicable.

6.4.2.2 Contents of Standard Clearances for Arriving Aircraft

6.4.2.2.1 The ATS provider shall ensure that standard clearances for arriving aircraft contain the following items:

a) aircraft identification;

b) designator of the assigned STAR if applicable;

c) runway-in-use, except when part of the STAR description;

d) cleared level; and

e) any other necessary instructions or information not contained in the STAR description, e.g. change of communications.

6.4.2.3 Clearances on a Star

6.4.2.3.1 The ATS provider shall ensure that Clearances to aircraft on a STAR with remaining published level and/or speed restrictions shall indicate if such restrictions are to be followed or are cancelled.

6.4.2.3.1.1 The following phraseologies shall be used with the following meaning:

a) DESCEND VIA STAR TO (level):

i) descend to the cleared level and comply with published level restrictions;

ii) follow the lateral profile of the STAR; and

iii) comply with published speed restrictions or ATC-issued speed control instructions as applicable.

b) DESCEND VIA STAR TO (level), CANCEL LEVEL RESTRICTION(S):

i) descend to the cleared level; published level restrictions are cancelled;

ii) follow the lateral profile of the STAR; and

iii) comply with published speed restrictions or ATC-issued speed control instructions as applicable.

c) DESCEND VIA STAR TO (level), CANCEL LEVEL RESTRICTION(S) AT (point(s)):

i) descend to the cleared level; published level restriction(s) at the specified point(s) are cancelled;

ii) follow the lateral profile of the STAR; and

iii) comply with published speed restrictions or ATC-issued speed control instructions as applicable.

d) DESCEND VIA STAR TO (level), CANCEL SPEED RESTRICTION(S):

i) descend to the cleared level and comply with published level restrictions;

ii) follow the lateral profile of the STAR; and

iii) published speed restrictions and ATC-issued speed control instructions are cancelled.

e) DESCEND VIA STAR TO (level), CANCEL SPEED RESTRICTION(S) AT (point(s)):

i) descend to the cleared level and comply with published level restrictions;

ii) follow the lateral profile of the STAR; and

iii) published speed restrictions are cancelled at the specified point(s).

f) DESCEND UNRESTRICTED TO (level) or DESCEND TO (level), CANCEL LEVEL AND SPEED RESTRICTION(S):

i) descend to the cleared level; published level restrictions are cancelled;

ii) follow the lateral profile of the STAR; and

iii) published speed restrictions and ATC-issued speed control instructions are cancelled.

6.4.2.3.2 When an arriving aircraft is cleared to proceed direct to a published waypoint on the STAR, the speed and level restrictions associated with the bypassed waypoints are cancelled. All remaining published speed and level restrictions shall remain applicable.

6.4.2.3.3 When an arriving aircraft is vectored or cleared to proceed to a point that is not on the STAR, all the published speed and level restrictions of the STAR are cancelled and the controller shall:

a) reiterate the cleared level;

b) provide speed and level restrictions as necessary; and

c) notify the pilot if it is expected that the aircraft will be instructed to subsequently rejoin the STAR

6.4.2.3.4 ATC instructions to an aircraft to rejoin a STAR shall include:

a) the designator of the STAR to be rejoined, unless advance notification of rejoin has been provided in accordance with 6.4.2.3.3;

b) the cleared level on rejoining the STAR in accordance with 6.4.2.3.1; and

c) the position at which it is expected to rejoin the STAR.

6.4.3 Visual approach

6.4.3.1 Subject to the conditions in 6.4.3.3, clearance for an IFR flight to execute a visual approach may be requested by a flight crew or initiated by the controller. In the latter case, the concurrence of the flight crew shall be required.

6.4.3.2 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.

6.4.3.3 An IFR flight may be cleared to execute a visual approach provided the pilot can maintain visual reference to the terrain and:

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

b) 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.

6.4.3.4 Separation shall be provided between an aircraft cleared to execute a visual approach and other arriving and departing aircraft.

6.4.3.5 For successive visual approaches, separation shall be maintained by the controller until the pilot of a succeeding aircraft reports having the preceding aircraft in sight. The aircraft shall then be instructed to follow and maintain own separation from the preceding aircraft. When both aircraft are of a heavy wake turbulence category, or the preceding aircraft is of a heavier wake turbulence category than the following, and the distance between the aircraft is less than the appropriate wake turbulence minimum, the controller shall issue a caution of possible wake turbulence. 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 ATC unit accordingly, stating their requirements

6.4.4 Instrument approach

6.4.4.1 The approach control unit shall specify the instrument approach procedure to be used by arriving aircraft.

6.4.4.2 If a pilot reports or it is clearly apparent to the ATC unit that the pilot is not familiar with an instrument approach procedure, the initial approach level, the point (in minutes from the appropriate reporting point) at which base turn or procedure turn will be started, the level at which the procedure turn shall be carried out and the final approach track shall be specified, except that only the last-mentioned need be specified if the aircraft is to be cleared for a straight-in approach. The frequency(ies) of the navigation aid(s) to be used as well as the missed approach procedure shall also be specified when deemed necessary.

6.4.4.3 If visual reference to terrain is established before completion of the approach procedure, the entire procedure must nevertheless be executed unless the aircraft requests and is cleared for a visual approach.

6.4.5 Holding

6.4.5.1 When delay is expected, the ACC shall normally be responsible for clearing aircraft to the holding fix, and for including holding instructions, and expected approach time or onward clearance time, as applicable, in such clearances.

6.4.5.2 After coordination with the approach control unit, the ACC may clear an arriving aircraft to a visual holding location to hold until further advised by the approach control unit.

6.4.5.3 After coordination with the aerodrome control tower, the approach control unit may clear an arriving aircraft to a visual holding location to hold until further advised by the aerodrome control tower.

6.4.5.4 Holding and holding pattern entry shall be accomplished in accordance with procedures established by the ATS provider and published in AIPs. 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 the designator of the location or aid to be used, the inbound track, radial or bearing, direction of turn in the holding pattern as well as the time of the outbound leg or the distances between which to hold.

6.4.5.5 The Appropriate air trffic control unit shall ensure that the required minimum vertical, lateral or longitudinal separation from other aircraft is provided. Criteria and procedures for the simultaneous use of adjacent holding patterns shall be prescribed in local instructions.

6.4.5.6 Levels at a holding fix or visual holding location 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 fix or visual holding location may be at the lowest level, with following aircraft at successively higher levels.

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

6.4.6 Approach sequence

6.4.6.1 General

The following procedures shall be applied whenever approaches are in progress

6.4.6.1.1 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 search and rescue operations; and

d) other aircraft as may be communicated by the appropriate authority.

Note. — An aircraft which has encountered an emergency is handled as outlined

6.4.6.1.2 Succeeding aircraft shall be cleared for approach:

a) when the preceding aircraft has reported that it is able to complete its approach without encountering instrument meteorological conditions; or

b) when the preceding aircraft is in communication with and sighted by the aerodrome control tower, and reasonable assurance exists that a normal landing can be accomplished; or

c) when timed approaches are used, the preceding aircraft has passed the defined point inbound, and reasonable assurance exists that a normal landing can be accomplished*;*

d) when the use of an ATS surveillance system confirms that the required longitudinal spacing between succeeding aircraft has been established.

6.4.6.1.3 In establishing the approach sequence, the need for increased longitudinal spacing between arriving aircraft due to wake turbulence shall be taken into account.

6.4.6.1.4 If the pilot of an aircraft in an approach sequence has indicated an intention to hold for weather improvement, or for other reasons, such action shall be approved. However, when other holding aircraft indicate intention to continue their approach to land, the pilot desiring to hold will be cleared to an adjacent fix for holding awaiting weather change or re-routing. Coordination shall be effected with any adjacent ATC unit or control sector, when required, to avoid conflict with the traffic under the jurisdiction of that unit or sector.

6.4.6.2 Sequencing and Spacing of Instrument Approaches

6.4.6.2.1 Timed Approach Procedures

6.4.6.2.1.1 Subject to approval by the ATS provider, the following procedure may be utilized as necessary to expedite the approaches of a number of arriving aircraft:

a) a suitable point on the approach path, which shall be capable of being accurately determined by the pilot, shall be specified, to serve as a checkpoint in timing successive approaches;

b) aircraft shall be given a time at which to pass the specified point inbound, which time shall be determined with the aim of achieving the desired interval between successive landings on the runway while respecting the applicable separation minima at all times, including the period of runway occupancy.

6.4.6.2.1.2 The time at which aircraft should pass the specified point shall be determined by the unit providing approach control service and notified to the aircraft sufficiently in advance to permit the pilot to arrange the flight path accordingly.

6.4.6.2.1.3 Each aircraft in the approach sequence shall be cleared to pass the specified point inbound at the previously notified time, or any revision thereof, after the preceding aircraft has reported passing the point inbound.

6.4.6.2.2 Interval between Successive Approaches

6.4.6.2.2.1 In determining the time interval or longitudinal distance to be applied between successive approaching aircraft, the relative speeds between succeeding aircraft, the distance from the specified point to the runway, the need to apply wake turbulence separation, runway occupancy times, the prevailing meteorological conditions as well as any condition which may affect runway occupancy times shall be considered. When an ATS surveillance system is used to establish an approach sequence, the minimum distance to be established between succeeding aircraft shall be specified in local instructions. Local instructions shall additionally specify the circumstances under which any increased longitudinal distance between approaches may be required as well as the minima to be used under such circumstances.

6.4.6.2.3 Information on Approach Sequence

6.4.6.2.3.1 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.

Note 1. — Guidance material on factors to be taken into account when determining separation for timed approaches is contained in the Air Traffic Services Planning Manual (Doc 9426).

Note2.— Detailed characteristics of wake vortices and their effect on aircraft are contained in the Air Traffic Services Planning Manual (Doc 9426), Part II, Section 5.

6.4.7 Expected approach time

6.4.7.1 An expected approach time shall be determined for an arriving aircraft that will be subjected to a delay of 10 minutes or more or such other period as has been determined by the appropriate authority. The expected approach time shall be transmitted to the aircraft as soon as practicable and preferably not later than at the commencement of its initial descent from cruising level. A revised expected approach time shall be transmitted to the aircraft without delay whenever it differs from that previously transmitted by 5 minutes or more, or such lesser period of time as has been established by the appropriate ATS authority or agreed between the ATS units concerned.

6.4.7.2 An expected approach time shall be transmitted to the aircraft by the most expeditious means whenever it is anticipated that the aircraft will be required to hold for 30 minutes or more.

6.4.7.3 The holding fix to which an expected approach time relates shall be identified together with the expected approach time whenever circumstances are such that this would not otherwise be evident to the pilot.

6.5 Information for Arriving Aircraft

6.5.1 As early as practicable after an aircraft has established communication with the unit providing approach control service, the following elements of information, in the order listed, shall be transmitted to the aircraft, with the exception of such elements which it is known the aircraft has already received:

a) type of approach and runway-in-use;

b) meteorological information, as follows:

1) surface wind direction and speed, including significant variations;

2) visibility and, when applicable, runway visual range (RVR);

3) present weather;

4) 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;

5) air temperature;

6) dew point temperature, inclusion determined on the basis of a regional air navigation agreement;

7) altimeter setting(s);

8) any available information on significant meteorological phenomena in the approach area; and

9) trend-type landing forecast, when available.

c) current runway surface conditions, in case of precipitants or other temporary hazards;

d) changes in the operational status of visual and non-visual aids essential for approach and landing.

6.5.2 If it becomes necessary or operationally desirable that an arriving aircraft follow an instrument approach procedure or use a runway other than that initially stated, the flight crew shall be advised without delay.

6.5.3 At the commencement of final approach, the following information shall be transmitted to aircraft:

a) significant changes in the mean surface wind direction and speed;

Note. — Significant changes are specified in Annex 3, Chapter 4. However, if the controller possesses wind information in the form of components, the significant changes are:

— Mean headwind component: 19 km/h (10 kt)

— Mean tailwind component: 4 km/h (2 kt)

— Mean crosswind component: 9 km/h (5 kt)

b) the latest information, if any, on wind shear and/or turbulence in the final approach area;

c) the current visibility representative of the direction of approach and landing or, when provided, the current runway visual range value(s) and the trend.

6.5.4 During final approach, the following information shall be transmitted without delay:

a) the sudden occurrence of hazards (e.g. unauthorized traffic on the runway);

b) significant variations in the current surface wind, expressed in terms of minimum and maximum values;

c) significant changes in runway surface conditions;

d) changes in the operational status of required visual or non-visual aids;

e) changes in observed RVR value(s), in accordance with the reported scale in use, or changes in the visibility representative of the direction of approach and landing.

Chapter 7: PROCEDURES FOR AERODROME CONTROL SERVICE

Note. — This Chapter also includes procedures for the operation of aeronautical ground lights, see Section 7.15.

7.1 Functions of Aerodrome Control Towers

7.1.1 General

7.1.1.1 The ATS provider shall ensure that the Aerodrome control towers shall issue information and clearances to aircraft under their control to achieve a safe, orderly and expeditious flow of air traffic on and in the vicinity of an aerodrome with the object of preventing collision(s) between:

a) aircraft flying within the designated area of responsibility of the control tower, including the aerodrome traffic circuits;

b) aircraft operating on the manoeuvring area;

c) aircraft landing and taking off;

d) aircraft and vehicles operating on the manoeuvring area;

e) aircraft on the manoeuvring area and obstructions on that area.

7.1.1.2 The ATS provider shall establish procedures to ensure that Aerodrome controllers maintain a continuous watch on all flight operations on and in the vicinity of an aerodrome as well as vehicles and personnel on the manoeuvring area. Watch shall be maintained by visual observation, augmented when available by an ATS surveillance system. Traffic shall be controlled in accordance with the civil aviation regulations and these standards. If there are other aerodromes within a control zone, traffic at all aerodromes within such a zone shall be coordinated so that traffic circuits do not conflict.

7.1.1.2.1 Visual observation shall be achieved through direct out-of-the-window observation, or through indirect observation utilizing a visual surveillance system which is specifically approved for the purpose by RCAA

7.1.2 Alerting service provided by aerodrome control towers

7.1.2.1 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.

d) when otherwise deemed necessary or desirable.

7.1.2.2 The ATS provider shall ensure that procedures concerning the alerting of the rescue and fire fighting services be contained in local instructions. 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.

7.1.2.3 The ATS provider shall ensure that 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 or rescue sub-centre, in accordance with local instructions.

7.1.3 Failure or irregularity of aids and equipment

Aerodrome control towers shall immediately report in accordance with local 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.

7.2 Selection of Runway-In-Use

7.2.1 The term “runway-in-use” shall be used to indicate the runway or runways that, at a particular time, are considered by the aerodrome control tower to be the most suitable for use by the types of aircraft expected to land or take off at the aerodrome

7.2.2 Normally, an aircraft will land and take off into wind unless safety, the runway configuration, meteorological conditions and available instrument approach procedures or air traffic conditions determine that a different direction is preferable. In selecting the runway-in-use, however, the unit providing aerodrome control service shall take into consideration, besides surface wind speed and direction, other relevant factors such as the aerodrome traffic circuits, the length of runways, and the approach and landing aids available.

7.2.3 A runway for take-off or landing, appropriate to the operation, may be nominated for noise abatement purposes, the objective being to utilize whenever possible those runways that permit aeroplanes to avoid noise-sensitive areas during the initial departure and final approach phases of flight.

7.2.4 The ATS provider shall ensure that Noise abatement shall not be a determining factor in runway nomination under the following circumstances:

a) if the runway surface conditions are adversely affected (e.g. by snow, slush, ice, water, mud, rubber, oil or other substances);

b) for landing in conditions:

1) when the ceiling is lower than 150 m (500 ft) above aerodrome elevation, or the visibility is less than 1 900 m; or

2) when the approach requires use to be made of vertical minima greater than 100 m (300 ft) above aerodrome elevation and:

i) the ceiling is lower than 240 m (800 ft) above aerodrome elevation; or

ii) the visibility is less than 3 000 m;

c) for take-off when the visibility is less than 1 900 m;

d) when wind shear has been reported or forecast or when thunderstorms are expected to affect the approach or departure; and

e) when the crosswind component, including gusts, exceeds 28 km/h (15 kt), or the tailwind component, including gusts, exceeds 9 km/h (5 kt).

7.3 Initial call to Aerodrome Control Tower

7.3.1 For aircraft being provided with aerodrome control service, the initial call shall contain:

a) designation of the station being called;

b) call sign and, for aircraft in the SUPER or HEAVY wake turbulence category, the word "super" or "heavy";

c) position; and

d) additional elements, as required by the ATS provider.

7.4 Information to Aircraft by Aerodrome Control Towers

7.4.1 Information related to the operation of aircraft

7.4.1.1 Start-Up Time Procedures

7.4.1.1.1 A start-up clearance shall only be withheld under circumstances or conditions specified by the ATS provider.

7.4.1.1.2 If a start-up clearance is withheld, the flight crew shall be advised of the reason.

7.4.1.2 Aerodrome and Meteorological Information

7.4.1.2.1 The ATS provider shall establish procedure to encue that Prior to taxiing for take-off, aircraft shall be advised of 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 therefrom;

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;

d) the air temperature for the runway to be used, in the case of turbine-engined aircraft;

e) the visibility representative of the direction of take-off and initial climb, if less than 10 km, or, when applicable, the RVR value(s) for the runway to be used;

f) the correct time.

7.4.1.2.2 The ATS provider shall establish procedure to encue that Prior to take-off aircraft shall be advised of:

a) any significant changes in the surface wind direction and speed, the air temperature, and the visibility or RVR value(s) given in accordance with 7.4.1.2.1;

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.

7.4.1.2.3 The ATS provider shall establish procedure to encue that 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 therefrom;

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.

7.4.1.3 Essential Local Traffic Information

7.4.1.3.1 The ATS provider shall ensure that Information on essential local traffic be issued in a timely manner, either directly or through the unit providing approach control service when, in the judgement of the aerodrome controller, such information is necessary in the interests of safety, or when requested by aircraft.

7.4.1.3.2 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.

7.4.1.3.3 Essential local traffic shall be described so as to be easily identified.

7.4.1.4 Runway Incursion or Obstructed Runway

7.4.1.4.1 The ATS provider shall ensure that 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.

7.4.1.4.2 The ATS provider shall ensure that Pilots and air traffic controllers shall report any occurrence involving an obstruction on the runway or a runway incursion

7.4.1.5 Uncertainty of Position on the Manoeuvring Area

7.4.1.5.1 The ATS provider shall ensure that Except as provided for in 7.4.1.5.2, 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).

7.4.1.5.2 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.

7.4.1.5.3 The ATS provider shall ensure that 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.

7.4.1.5.4 The ATS provider shall ensure that 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.

7.4.1.6 Wake Turbulence and Jet blast hazards

7.4.1.6.1 The ATS provider shall ensure that Aerodrome controllers shall, when applicable, apply the wake turbulence separation minima specified in Chapter 5, Section 5.4 Whenever the responsibility for wake turbulence avoidance rests with the pilot-in-command, aerodrome controllers shall, to the extent practicable, advise aircraft of the expected occurrence of hazards caused by turbulent wake.

Note. — Occurrence of turbulent wake hazards cannot be accurately predicted and aerodrome controllers cannot assume responsibility for the issuance of advice on such hazards at all times, nor for its accuracy. Information on hazards due to wake vortices is contained in the Air Traffic Services Planning Manual (Doc 9426), Part II, Section 5. Wake turbulence categories of aircraft are specified in Chapter 4, 4.9.1.

7.4.1.7 Abnormal aircraft configuration and condition

7.4.1.7.1 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.

7.4.1.7.2 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.

7.5 Essential Information on Aerodrome Conditions

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

a) construction or maintenance work on, or immediately adjacent to the movement area;

b) rough or broken surfaces on a runway, a taxiway or an apron, whether marked or not;

c) water, snow, slush, ice or frost on a runway, a taxiway or an apron;

d) anti-icing or de-icing liquid chemicals or other contaminant on a runway, taxiway or apron;

e) snow banks or drifts adjacent to a runway, a taxiway or an apron;

f) other temporary hazards, including parked aircraft and birds on the ground or in the air;

g) failure or irregular operation of part or all of the aerodrome lighting system;

h) any other pertinent information.

7.5.2 The ATS provider shall ensure that Essential information on aerodrome conditions shall be given to every aircraft, except when it is known that the aircraft already has received all or

part of the information from other sources. The information shall be given in sufficient time for the aircraft to make proper use of it, and the hazards shall be identified as distinctly as possible.

7.5.3 The ATS provider shall ensure that 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 terminated until otherwise advised by the appropriate aerodrome authority

7.6 Control of Aerodrome Traffic

7.6.1 General

7.6.1.1 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.

7.6.2 Traffic on the manoeuvring area

7.6.2.1 Control of Taxiing Aircraft

7.6.2.1.1 Taxi Clearance

7.6.2.1.1.1 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.

7.6.2.1.1.2 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.

7.6.2.1.2 Use of Runway-Holding Positions

7.6.2.1.2.1 Except as provided in 7.6.2.1.2.2 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.

7.6.2.1.2.2 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.

7.6.2.2 Control of Other than aircraft Traffic

7.6.2.2.1 Entry to the Manoeuvring Area

7.6.2.2.1.1 The ATS provider shall ensure that 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.

7.6.2.2.2 Priority on the Manoeuvring Area

7.6.2.2.2.1 The ATS provider shall ensure that 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.

7.6.2.2.2.2 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.

7.6.2.2.3 Communication Requirements and Visual Signals

7.6.2.2.3.1 The ATS provider shall ensure that at controlled aerodromes all vehicles employed on the manoeuvring area shall be capable of maintaining two-way radiocommunication 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.

7.6.2.2.3.2 When communications by a system of visual signals is deemed to be adequate, or in the case of radiocommunication failure, the signals given hereunder shall have the meaning indicated therein:

Light signal from aerodrome control	*Meaning*
Green flashes	Permission to cross landing area or to move onto taxiway
Steady red	Stop
Red flashes	Move off the landing area or taxiway and watch out for aircraft
White flashes	Vacate manoeuvring area in accordance with local instructions

7.6.2.2.3.3 In emergency conditions or if the signals in 7.6.2.2.3.2 are not observed, the signal given hereunder shall be used for runways or taxiways equipped with a lighting system and shall have the meaning indicated therein.

Light signal	Meaning
Flashing runway or taxiway lights	Vacate the runway and observe the tower for light signal

7.7 Control of Traffic in the Traffic Circuit

7.7.1 General

7.7.1.1 The ATS provider shall ensure that Aircraft in the traffic circuit be controlled to provide the separation minima outlined in 7.9.2, 7.10.1 and 7.11 and Chapter 5, Section 5.4, 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 in accordance with Chapter 16, Section 16.1.

7.7.1.2 Sufficient separation shall be effected between aircraft in flight in the traffic circuit to allow the spacing of arriving and departing aircraft as outlined in 7.9.2, 7.10.1 and 7.11 and Chapter 5, Section 5.4.

7.7.2 Entry of traffic circuit

7.7.2.1 The ATS provider shall ensure that an arriving aircraft executing an instrument approach shall normally be cleared to land straight in unless visual manoeuvring to the landing runway is required.

7.7.3 Priority for landing

7.7.3.1The ATS provider shall ensure that if an aircraft enters an aerodrome traffic circuit without proper authorization, it shall be permitted to land if its actions indicate that it so desires. If circumstances warrant, aircraft which are in contact with the controller may be instructed by the controller to give way so as to remove as soon as possible the hazard introduced by such unauthorized operation. In no case shall permission to land be withheld indefinitely.

7.7.3.2 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.

7.8 Order of priority for arriving and departing Aircraft

7.8.1 The ATS provider shall ensure that an aircraft landing or in the final stages of an approach to land shall normally have priority over an aircraft intending to depart from the same or an intersecting runway.

7.9 Control of departing Aircraft

7.9.1 Departure sequence

7.9.1.1. The ATS provider shall ensure that 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 1. — 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.

7.9.2 Separation of departing aircraft

7.9.2.1 Except as provided in 7.11 and Chapter 5, Section 5.4, a departing aircraft will not normally 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 or until all preceding landing aircraft are clear of the runway-in-use.

7.9.3 Take-off clearance

7.9.3.1 The ATS provider shall ensure that when an ATC clearance is required prior to take-off, 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.

7.9.3.2 The ATSprovider shall ensure that the expression **TAKE-OFF** shall only be used in radiotelephony when an aircraft is cleared for take-off or when cancelling a take-off clearance.

7.9.3.3 Subject to 7.9.3.1, 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.

7.9.3.4 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.

7.10 Control of arriving Aircraft

7.10.1 Clearance to land

7.10.1.1 The ATS provider shall ensure that an aircraft is cleared to land when there is reasonable assurance that the separation will exist with the preceding landing aircraft. To reduce the potential for misunderstanding, the landing clearance shall include the designator of the landing runway.

7.10.2 Landing and roll-out manoeuvres

7.10.2.1 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.

7.10.2.2 The ATS provider shall ensure that 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. A SUPER or HEAVY aircraft shall not be requested to land beyond the touchdown zone of a runway.

7.10.2.3 The ATS provider shall ensure that if the pilot-in-command considers that it is not possible to comply with the requested operation, the controller shall be advised without delay.

7.10.2.4 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.

7.11 Reduced runway separation minima between aircraft Using the same Runway

7.11.1 The ATS provider shall ensure that the safety risk assessment shall be carried out for each runway for which the reduced minima are intended, taking into account factors such as:

a) runway length;

b) aerodrome layout; and

c) types/categories of aircraft involved

7.11.2 The ATS provider shall ensure that all applicable procedures related to the application of reduced runway separation minima be published in the Aeronautical Information Publication as well as in local air traffic control instructions and controllers shall be provided with appropriate and adequate training in the use of the procedures.

7.11.3 The ATS provider shall ensure that reduced runway separation minima shall only be applied during the hours of daylight from 30 minutes after local sunrise to 30 minutes before local sunset.

7.11.4 The ATS provider shall ensure that for the purpose of reduced runway separation, aircraft shall be classified as follows:

a) *Category 1 aircraft:* single-engine propeller aircraft with a maximum certificated take-off mass of 2 000 kg or less;

b) *Category 2 aircraft:* single-engine propeller aircraft with a maximum certificated take-off mass of more than 2 000 kg but less than 7 000 kg; and twin-engine propeller aircraft with a maximum certificated take-off mass of less than 7 000 kg;

c) *Category 3 aircraft:* all other aircraft.

7.11.5 The ATS provider shall ensure that reduced runway separation minima shall not apply between a departing aircraft and a preceding landing aircraft.

7.11.6 The ATS provider shall ensure that reduced runway separation minima shall be subject to the following conditions:

a) wake turbulence separation minima shall be applied;

b) visibility shall be at least 5 km and ceiling shall not be lower than 300 m (1 000 ft);

c) tailwind component shall not exceed 5 kt;

d) there shall be available means, such as suitable landmarks, to assist the controller in assessing the distances between aircraft. A surface surveillance system that provides the air traffic controller with position information on aircraft may be utilized, provided that approval for operational use of such equipment includes a safety risk assessment to ensure that all requisite operational and performance requirements are met;

e) minimum separation continues to exist between two departing aircraft immediately after take-off of the second aircraft;

f) traffic information shall be provided to the flight crew of the succeeding aircraft concerned; and

g) the braking action shall not be adversely affected by runway contaminants such as ice, slush, snow and water.

7.11.7 The ATS provider shall ensure that reduced runway separation minima which may be applied at an aerodrome shall be determined for each separate runway. The separation to be applied shall in no case be less than the following minima:

a) landing aircraft:

1) a succeeding landing Category 1 aircraft may cross the runway threshold when the preceding aircraft is a Category 1 or 2 aircraft which either:

i) has landed and has passed a point at least 600 m from the threshold of the runway, is in motion and will vacate the runway without backtracking; or

ii) is airborne and has passed a point at least 600 m from the threshold of the runway;

2) a succeeding landing Category 2 aircraft may cross the runway threshold when the preceding aircraft is a Category 1 or 2 aircraft which either:

i) has landed and has passed a point at least 1 500 m from the threshold of the runway, is in motion and will vacate the runway without backtracking; or

ii) is airborne and has passed a point at least 1 500 m from the threshold of the runway;

3) a succeeding landing aircraft may cross the runway threshold when a preceding Category 3 aircraft:

i) has landed and has passed a point at least 2 400 m from the threshold of the runway, is in motion and will vacate the runway without backtracking; or

ii) is airborne and has passed a point at least 2 400 m from the threshold of the runway;

b) departing aircraft:

1) a Category 1 aircraft may be cleared for take-off when the preceding departing aircraft is a Category 1 or 2 aircraft which is airborne and has passed a point at least 600 m from the position of the succeeding aircraft;

2) a Category 2 aircraft may be cleared for take-off when the preceding departing aircraft is a Category 1 or 2 aircraft which is airborne and has passed a point at least 1 500 m from the position of the succeeding aircraft; and

3) an aircraft may be cleared for take-off when a preceding departing Category 3 aircraft is airborne and has passed a point at least 2 400 m from the position of the succeeding aircraft.

7.11.7.1 Consideration should be given to increased separation between high performance single-engine aircraft and preceding Category 1 or 2 aircraft.

7.12 Use of a Visual surveillance system in Aerodrome control service

7.12.1 Capabilities

7.12.1.1 When visual surveillance systems used in the provision of aerodrome control services, it shall have an appropriate level of reliability, availability and integrity. The possibility of system failures or significant system degradations, which may cause complete or partial interruptions of service, shall be assessed and taken into account in the definition of the level of service provided in order to ensure that there is no degradation in the safety level of the services rendered. Backup

facilities or alternative operational procedures shall be provided

7.12.2 The level of service to be provided shall be commensurate with the technical capabilities of the system.

7.13 Procedures for Low Visibility Operations

7.13.1 Control of aerodrome surface traffic in conditions of low visibility

7.13.1.1The ATS provider shall ensure that 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:

7.13.1.1.1 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.

7.13.1.1.2 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.

7.13.2 Procedures for control of aerodrome traffic when category II/III approaches are in use

7.13.2.1 The ATS provider 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.

7.13.3 The ATS provider shall ensure that Low visibility operations be initiated by or through the aerodrome control tower.

7.13.4 The ATS provider shall ensure that the aerodrome control tower 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.

7.13.5 Provisions regarding low visibility operations shall specify:

a) the RVR value(s) at which the low visibility operations procedures shall be implemented;

b) the minimum ILS/MLS 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/MLS 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:

1) the runway-holding positions to be used;

2) the minimum distance between an arriving and a departing aircraft to ensure protection of the sensitive and critical areas;

3) procedures to verify that aircraft and vehicles have vacated the runway;

4) 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)*

7.13.6 The ATS provider shall ensure that 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 and shall limit the movement of persons and vehicles on the monouvering area to as much as possible.

7.14 Suspension of Visual Flight Rules Operations

7.14.1 Any or all VFR operations on and in the vicinity of an aerodrome may be suspended by any of the following units, persons or authorities whenever safety requires such action:

a) the approach control unit or the appropriate ACC;

b) the aerodrome control tower;

c) the appropriate ATS authority.

7.14.2 All such suspensions of VFR operations shall be accomplished through or notified to the aerodrome control tower.

7.14.3 The ATS provider shall ensure that the following procedures are 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.

7.15 Authorization of Special VFR Flights

7.15.1 When traffic conditions permit, special VFR flights may be authorized subject to the approval of the unit providing approach control service and the provisions of 7.15.1.3.

7.15.1.1 Requests for such authorization shall be handled individually.

7.15.1.2 Separation shall be effected between all IFR flights and special VFR flights in accordance with separation minima in Chapters 5 and 6 and, when so prescribed by the ATS provider, between all special VFR flights in accordance with separation minima prescribed by the service provider.

Note.— Requirements for two-way communications between controlled flights and the appropriate air traffic control unit are contained in part 40 of civil aviation regulations.

7.16 Aeronautical Ground Lights

7.16.1 Operation

Note.— The procedures in this Section apply to all aerodromes, whether or not aerodrome control service is provided. In addition, the procedures in 7.16.2.1 apply to all aeronautical ground lights, whether or not they are on or in the vicinity of an aerodrome.

7.16.2 General

7.16.2.1 The ATS provider shall ensure that all aeronautical ground lights shall be operated, except as provided in 7.16.2.2 and 7.16.3:

a) continuously during the hours of darkness or during the time the centre of the sun's disc is more than 6 degrees below the horizon, whichever requires the longer period of operation, unless otherwise provided hereafter or otherwise required for the control of air traffic;

b) at any other time when their use, based on meteorological conditions, is considered desirable for the safety of air traffic.

7.16.2.2 The ATS provider shall ensure that Lights on and in the vicinity of aerodromes that are not intended for en-route navigation purposes may be turned off, subject to further provisions hereafter, 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.

7.16.2.3 At aerodromes equipped with lights of variable intensity a table of intensity settings, based on conditions of visibility and ambient light, may be provided for the guidance of air traffic controllers in effecting adjustment of these lights to suit the prevailing conditions. When so requested by an aircraft, further adjustment of the intensity shall be made whenever possible.

7.16.3 Approach lighting

Note.— 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.

7.16.3.1 The ATS provider shall ensure thatin addition to 7.16.2.1 approach lighting shall also be operated:

a) by day when requested by an approaching aircraft;

b) when the associated runway lighting is operated.

7.16.3.2 The ATS provider shall ensure that 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.

7.16.4 Runway lighting

Note.— Runway lighting includes such lights as edge, threshold, centre line, end, touchdown zone and wing bar lights.

7.16.4.1 The ATS provider shall ensure that Runway lighting shall not be operated if that runway is not in use for landing, take-off or taxiing purposes, unless required for runway inspections or maintenance.

7.16.4.2 The ATS provider shall ensure that if runway lighting is not operated continuously, lighting following a take-off shall be provided as specified below:

a) 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;

b) at aerodromes without air traffic control service or without centrally controlled lights, the lights of one runway shall remain lighted until such time as would normally be required to reactivate the lights in the likelihood of the departing aircraft returning for an emergency landing, and in any case not less than fifteen minutes after take-off.

Note.— Where obstacle lighting is operated simultaneously with runway lighting as provided in 7.16.8.1, particular care should be taken to ensure that it is not turned off until no longer required by the aircraft

7.16.5 Stopway lighting

7.16.5.1 The ATS provider shall ensure that Stopway lights shall be operated whenever the associated runway lights are operated.

7.16.6 Taxiway lighting

Note.— Taxiway lighting includes such lights as edge lights, centre line lights, stop bars and clearance bars.

7.16.6.1 The ATS provider shall ensure that 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.

7.16.7 Stop bars

7.16.7.1 The ATS provider shall ensure that Stop bars shall be switched on to indicate that all traffic shall stop and switched off to indicate that traffic may proceed.

Note.— 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.

7.16.8 Obstacle lighting

Note.— Obstacle lighting includes such lights as obstacle and unserviceability lights and hazard beacons.

7.16.8.1 Obstacle lighting associated with the approach to or departure from a runway or channel, where the obstacle does not project through the inner horizontal surface, as described in Annex 14, Volume I, Chapter 6, may be turned off and on simultaneously with the runway or channel lights.

7.16.8.2 Unserviceability lights may not be turned off as permitted under 7.16.2.2 while the aerodrome is open.

7.16.9 Monitoring of visual aids

7.16.9.1 The ATS provider shall ensure that 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.

7.16.9.2 The ATS provider shall ensure that iIn 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.

7.16.9.3 The ATS provider shall ensure that 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.

7.17 Designation of Hot Spot(S)

7.17.1 The ATS provider shall ensure that the aerodrome operator shall designate, whenever necessary, a location or several locations on the movement area of the aerodrome as hot spot(s).

7.17.2 The hot spot(s) shall be charted in accordance with Annex 4, 13.6, 14.6, 15.6 and Appendix 2.

Note.— Guidance material related to hot spots is contained in the Manual on the Prevention of Runway Incursions *(Doc 9870)*

Chapter 8: ATS SURVEILLANCE SERVICES

8.1 ATS Surveillance Systems Capabilities

8.1.1 ATS surveillance systems used in the provision of air traffic services shall have a very high level of reliability, availability and integrity. The possibility of system failures or significant system degradations which may cause complete or partial interruptions of service shall be very remote.

8.1.2 The ATS provider shall ensure that backup facilities shall be provided.

Note 1.— An ATS surveillance system will normally consist of a number of integrated elements, including sensor(s), data transmission links, data-processing systems and situation displays.

Note 2.— Guidance material pertaining to use of radar and to system performance is contained in the Manual on Testing of Radio Navigation Aids *(Doc 8071), the* Manual on the Secondary Surveillance Radar (SSR) Systems *(Doc 9684) and the* Air Traffic Services Planning Manual *(Doc 9426).*

Note 3.— Guidance material pertaining to use of ADS-B and MLAT systems and their system performance is contained in Cir 326.

Note 4.—Functional and performance requirements pertaining to ATS surveillance systems are contained in Annex 10 — *Aeronautical Telecommunications*, Volume IV — *Surveillance and Collision Avoidance Systems*

8.1.3 The ATS provider shall ensure that ATS surveillance systems shall have the capability to receive, process and display, in an integrated manner, data from all the connected sources.

8.1.4 The ATS provider shall ensure that ATS surveillance systems are capable of integration with other automated systems used in the provision of ATS, and shall provide for an appropriate level of automation with the objectives of improving the accuracy and timeliness of data displayed to the controller and reducing controller workload and the need for verbal coordination between adjacent control positions and ATC units.

8.1.5 The ATS provider shall ensure that ATS surveillance systems provide for the display of safety-related alerts and warnings, including conflict alert, minimum safe altitude warning, conflict prediction and unintentionally duplicated SSR codes and aircraft identification.

8.1.6 ATS surveillance systems, such as primary surveillance radar (PSR), secondary surveillance radar (SSR), ADS-B and MLAT systems may be used either alone or in combination in the provision of air traffic services, including in the provision of separation between aircraft, provided:

a) reliable coverage exists in the area;

b) the probability of detection, the accuracy and the integrity of the ATS surveillance system(s) are satisfactory; and

c) in the case of ADS-B, the availability of data from participating aircraft is adequate.

8.1.7 PSR systems may be used in circumstances where other ATS surveillance systems alone would not meet the air traffic services requirements.

8.1.8 SSR systems, especially those utilizing monopulse techniques or having Mode S capability or MLAT, may be used alone, including in the provision of separation between aircraft, provided:

a) the carriage of SSR transponders is mandatory within the area; and

b) identification is established and maintained.

8.1.9 The ATS provider shall ensure that ADS-B, where applicable shall only be used for the provision of air traffic control service provided the quality of the information contained in the ADS-B message exceeds the values specified by the ATS provider.

8.1.10 The provision of ATS surveillance services shall be limited to specified areas of coverage and shall be subject to such other limitations as have been specified by the ATS provider. Adequate information on the operating methods used shall be published in aeronautical information publications, as well as operating practices and/or equipment limitations having direct effects on the operation of the air traffic services.

8.1.10.1 The provision of ATS surveillance services shall be limited when position data quality degrades below a level specified by the ATS provider.

8.1.11 Where PSR and SSR are required to be used in combination, SSR alone may be used in the event of PSR failure to provide separation between identified transponder-equipped aircraft, provided the accuracy of the SSR position indications has been verified by monitor equipment or other means.

8.2 Situation Display

8.2.1 The ATS provider shall ensure that 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.

8.2.2 The ATS surveillance system shall provide for a continuously updated presentation of surveillance information, including position indications.

8.2.3 Position indications may be displayed as:

a) individual position symbols, e.g. PSR, SSR, ADS-B or MLAT symbols, or combined symbols;

b) PSR blips; and

c) SSR responses.

8.2.4 The ATS provider shall ensure that when applicable, distinct symbols shall be used for presentation of:

a) unintentionally duplicated SSR codes and/or aircraft identification that are unintentionally duplicated;

b) predicted positions for a non-updated track; and

c) plot and track data.

8.2.5 The ATS provider shall ensure that 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.

8.2.6 The ATS provider shall ensure that Reserved SSR codes, including 7500, 7600 and 7700, operation of IDENT, ADS-B emergency and/or urgency modes, safety-related alerts and warnings as well as information related to automated coordination shall be presented in a clear and distinct manner, providing for ease of recognition.

8.2.7 The ATS provider shall ensure that Labels associated with displayed targets shall be used to provide, in alphanumeric form, relevant information derived from the means of surveillance and, where necessary, the flight data processing system.

8.2.8 The ATS provider shall ensure that Labels shall, as a minimum, include information relating to the identity of the aircraft, e.g. SSR code or aircraft

identification and, if available, pressure-altitude-derived level information. This information may be obtained from SSR Mode A, SSR Mode C, SSR Mode S and/or ADS-B.

8.2.9 The ATS provider shall ensure that Labels shall be associated with their position indications in a manner precluding erroneous identification by or confusion on the part of the controller. The ATS provider shall ensure that All label information shall be presented in a clear and concise manner.

8.3 Communications

8.3.1 The ATS provider shall ensure that the level of reliability and availability of communications systems shall be such that the possibility of system failures or significant degradations is very remote. Adequate backup facilities shall be provided.

8.3.2 Except as provided for in 8.7.3.3, direct controller-pilot communications shall be established prior to the provision of ATS surveillance services, unless special circumstances, such as emergencies, dictate otherwise.

8.4 Provision of ATS Surveillance Services

8.4.1 The ATS provider shall ensure that Information derived from ATS surveillance systems, including safety-related alerts and warnings such as conflict alert and minimum safe altitude warning, should be used to the extent possible in the provision of air traffic control service in order to improve capacity and efficiency as well as to enhance safety.

8.4.2 The ATS provider shall ensure that the number of aircraft simultaneously provided with ATS surveillance services shall not exceed that which can safely be handled under the prevailing circumstances, taking into account:

a) the structural complexity of the control area or sector concerned;

b) the functions to be performed within the control area or sector concerned;

c) assessments of controller workloads, taking into account different aircraft capabilities, and sector capacity; and

d) the degree of technical reliability and availability of the primary and backup communications, navigation and surveillance systems, both in the aircraft and on the ground.

8.5 Use of SSR Transponders and ADS-B Transmitters

8.5.1 General

8.5.1.1 The ATS provider shall ensure pilots and controllers strictly adhere to published operating procedures to ensure the safe and efficient use of ATS surveillance services, and standard radiotelephony phraseology shall be used. The correct setting of transponder codes and/or aircraft identification shall be ensured at all times.

8.5.2 SSR code management

8.5.2.1 Codes 7700, 7600 and 7500 shall be reserved internationally for use by pilots encountering a state of emergency, radiocommunication failure or unlawful interference, respectively.

8.5.2.2 SSR codes are to be allocated and assigned in accordance with the following principles.

8.5.2.2.1 Codes should be allocated to States or areas in accordance with regional air navigation agreements, taking into account overlapping radar coverage over adjacent airspaces.

8.5.2.2.2 The ATS provider shall ensure that shall establish a plan and procedures for the allocation of codes to ATS units.

8.5.2.2.3 The plan and procedures shall be compatible with those practised in adjacent States.

8.5.2.2.4 The allocation of a code shall preclude the use of this code for any other function within the area of coverage of the same SSR for a prescribed time period.

8.5.2.2.5 To reduce pilot and controller workload and the need for controller/pilot communications, the number of code changes required of the pilot should be kept to the minimum.

8.5.2.2.6 Codes shall be assigned to aircraft in accordance with the plan and procedures agreed by regional air navigation agreement

8.5.2.2.7 Where there is a need for individual aircraft identification, each aircraft shall be assigned a discrete code which should, whenever possible, be retained throughout the flight.

8.5.2.2.8 Except for aircraft in a state of emergency, or during communication failure or unlawful interference situations, and unless otherwise agreed by regional air navigation agreement or between a transferring and an accepting ATC unit, the transferring unit shall assign Code A2000 to a controlled flight prior to transfer of communications.

8.5.2.3 SSR codes shall be reserved, as necessary, for exclusive use by medical aircraft operating in areas of international armed conflict. SSR codes shall be allocated by ICAO through its Regional Offices in coordination with States concerned and should be assigned to aircraft for use within the area of conflict.

8.5.3 Operation of SSR transponders

8.5.3.1 The ATS provider shall ensure that when it is observed that the Mode A code shown on the situation display is different to what has been assigned to the aircraft, the pilot shall be requested to confirm the code selected and, if the situation warrants (e.g. not being a case of unlawful interference), to reselect the correct code.

8.5.3.2 If the discrepancy between assigned and displayed Mode A codes still persists, the pilot may be requested to stop the operation of the aircraft's transponder. The next control position and any other affected unit using SSR and/or MLAT in the provision of ATS shall be informed accordingly.

8.5.3.3 The ATS provider shall ensure that Aircraft equipped with Mode S having an aircraft identification feature shall transmit the aircraft identification as specified in the corresponding item of the filed flight plan, such as Item 7 of the FPL, or, when no flight plan has been filed, the aircraft registration.

8.5.3.4 The ATS provider shall ensure that whenever it is observed on the situation display that the aircraft identification transmitted by a Mode S-equipped aircraft is different from that expected from the aircraft, the pilot shall be requested to confirm and, if necessary, re-enter the correct aircraft identification.

8.5.3.5 The ATS provider shall ensure that If, following confirmation by the pilot that the correct aircraft identification has been set on the Mode S identification feature, the discrepancy continues to exist, the following actions shall be taken by the controller:

a) inform the pilot of the persistent discrepancy;

b) where possible, correct the label showing the aircraft identification on the situation display; and

c) notify the erroneous aircraft identification transmitted by the aircraft to the next control position and any other interested unit using Mode S for identification purposes.

8.5.4 Operation of ADS-B transmitters

8.5.4.1 The ATS provider shall ensure that Aircraft equipped with ADS-B having an aircraft identification feature shall transmit the aircraft identification as specified in the corresponding item of the filed flight plan, such as Item 7 of the FPL, or, when no flight plan has been filed, the aircraft registration.

8.5.4.2 The ATS provider shall ensure that whenever it is observed on the situation display that the aircraft identification transmitted by an ADS-B-equipped aircraft is different from that expected from the aircraft, the pilot shall be requested to confirm and, if necessary, re-enter the correct aircraft identification.

8.5.4.3 The ATS provider shall ensure that If, following confirmation by the pilot that the correct aircraft identification has been set on the ADS-B identification feature, the discrepancy continues to exist, the following actions shall be taken by the controller:

a) inform the pilot of the persistent discrepancy;

b) where possible, correct the label showing the aircraft identification on the situation display; and

c) notify the next control position and any other unit concerned of the erroneous aircraft identification transmitted by the aircraft.

8.5.5 Level information based on the use of pressure-altitude information

8.5.5.1 Verification of Level Information

8.5.5.1.1 The tolerance value used to determine that pressure-altitude-derived level information displayed to the controller is accurate shall be ±60 m (±200 ft) in RVSM airspace. In other airspace, it shall be ±90 m (±300 ft), except that the appropriate ATS authority may specify a smaller criterion, but not less than ±60 m (±200 ft), if this is found to be more practical. Geometric height information shall not be used for separation.

8.5.5.1.2 Verification of pressure-altitude-derived level information displayed to the controller shall be effected at least once by each suitably equipped ATC unit on initial contact with the aircraft concerned or, if this is not feasible, as soon as possible thereafter. The verification shall be effected by simultaneous comparison with altimeter-derived level information received from the same aircraft by radiotelephony. The pilot of the aircraft whose pressure-altitude-derived level information is within the approved tolerance value need not be advised of such verification. Geometric height information shall not be used to determine if altitude differences exist.

8.5.5.1.3 If the displayed level information is not within the approved tolerance value or when a discrepancy in excess of the approved tolerance value is detected subsequent to verification, the pilot shall be advised accordingly and requested to check the pressure setting and confirm the aircraft's level.

8.5.5.2 Determination of Level Occupancy

8.5.5.2.1 The criterion which shall be used to determine that a specific level is occupied by an aircraft shall be ±60 m (±200 ft) in RVSM airspace. In other airspace, it shall be ±90 m (±300 ft), except that the appropriate ATS authority may specify a smaller criterion, but not less than ±60 m (±200 ft), if this is found to be more practical

8.5.5.2.2 *Aircraft maintaining a level*. An aircraft is considered to be maintaining its assigned level as long as the pressure-altitude-derived level information indicates that it is within the appropriate tolerances of the assigned level, as specified in 8.5.5.2.1.

8.5.5.2.3 *Aircraft vacating a level.* An aircraft cleared to leave a level is considered to have commenced its manoeuvre and vacated the previously occupied level when the pressure-altitude-derived level information indicates a change of more than 90 m (300 ft) in the anticipated direction from its previously assigned level.

8.5.5.2.4 *Aircraft passing a level in climb or descent.* An aircraft in climb or descent is considered to have crossed a level when the pressure-altitude-derived level information indicates that it has passed this level in the required direction by more than 90 m (300 ft).

8.5.5.2.5 *Aircraft reaching a level.* An aircraft is considered to have reached the level to which it has been cleared when the elapsed time of three display updates, three sensor updates or 15 seconds, whichever is the greater, has passed since the pressure-altitude-derived level information has indicated that it is within the appropriate tolerances of the assigned level, as specified in 8.5.5.2.1.

8.5.5.2.6 Intervention by a controller shall only be required if differences in level information between that displayed to the controller and that used for control purposes are in excess of the values stated above.

8.6 General Procedures

8.6.1 Performance checks

8.6.1.1 The ATS provider shall ensure that the controller shall adjust the situation display(s) and carry out adequate checks on the accuracy thereof, in accordance with the technical instructions prescribed by the authority for the equipment concerned.

8.6.1.2 The controller shall be satisfied that the available functional capabilities of the ATS surveillance system as well as the information presented on the situation display(s) is adequate for the functions to be performed.

8.6.1.3 The ATS provider shall establish procedures to ensure that controller shall report, in accordance with local procedures, any fault in the equipment, or any incident requiring investigation, or any circumstances which make it difficult or impractical to provide ATS surveillance services.

8.6.2 Identification of aircraft

8.6.2.1 Establishment of Identification

8.6.2.1.1 The ATS provider shall ensure that before providing an ATS surveillance service to an aircraft, identification shall be established and the pilot informed. Thereafter, identification shall be maintained until termination of the ATS surveillance service.

8.6.2.1.2 If identification is subsequently lost, the pilot shall be informed accordingly and, when applicable, appropriate instructions issued.

8.6.2.1.3 Identification shall be established by at least one of the methods specified in 8.6.2.2, 8.6.2.3, 8.6.2.4 and 8.6.2.5.

8.6.2.2 ADS-B Identification Procedures

8.6.2.2.1 Where ADS-B is used for identification, aircraft may be identified by one or more of the following procedures:

a) direct recognition of the aircraft identification in an ADS-B label;

b) transfer of ADS-B identification (see 8.6.3); and

c) observation of compliance with an instruction to TRANSMIT ADS-B IDENT.

Note 1.— Some aircraft equipped with first generation ADS-B avionics do not have the capability of

squawking IDENT while the emergency and/or urgency mode is selected.

Note 2.— In automated systems, the "IDENT" feature may be presented in different ways, e.g. as a flashing of all or part of the position indication and associated label.

8.6.2.3 SSR and/Or MLAT Identification Procedures

8.6.2.3.1 Where SSR and/or MLAT is used for identification, aircraft may be identified by one or more of the following procedures:

a) recognition of the aircraft identification in an SSR and/or MLAT label;

Note.— The use of this procedure requires that the code/call sign correlation is achieved successfully,taking into account the Note following b) below.

b) recognition of an assigned discrete code, the setting of which has been verified, in an SSR and/or MLAT label; and

Note.— The use of this procedure requires a system of code assignment which ensures that each aircraft in a given portion of airspace is assigned a discrete code (see 8.5.2.2.7).

c) direct recognition of the aircraft identification of a Mode S-equipped aircraft in an SSR and/or MLAT label

Note. — The aircraft identification feature available in Mode S transponders provides the means to identify directly individual aircraft on situation displays and thus offers the potential to eliminate ultimately the recourse to Mode A discrete codes for individual identification. This elimination will only be achieved in a progressive manner depending on the state of deployment of suitable ground and airborne installations.

d) by transfer of identification (see 8.6.3);

e) observation of compliance with an instruction to set a specific code;

f) observation of compliance with an instruction to squawk IDENT.

Note 1.— In automated radar systems, the "IDENT" feature may be presented in different ways, e.g. as a flashing of all or part of the position indication and associated label.
Note 2.— Garbling of transponder replies may produce "IDENT"-type of indications. Nearly simultaneous "IDENT" transmissions within the same area may give rise to errors in identification.

8.6.2.3.2 When a discrete code has been assigned to an aircraft, a check shall be made at the earliest opportunity to ensure that the code set by the pilot is identical to that assigned for the flight. Only after this check has been made shall the discrete code be used as a basis for identification.

8.6.2.4 PSR Identification Procedures

8.6.2.4.1 Where PSR is used for identification, aircraft may be identified by one or more of the following procedures:

a) by correlating a particular radar position indication with an aircraft reporting its position over, or as bearing and distance from, a point shown on the situation display, and by

ascertaining that the track of the particular radar position is consistent with the aircraft path or reported heading;

Note 1.— Caution must be exercised when employing this method since a position reported in relation to a point may not coincide precisely with the radar position indication of the aircraft on the situation display. The appropriate ATS authority may, therefore, prescribe additional conditions for the application of this method, e.g.:
i) a level or levels above which this method may not be applied in respect of specified navigation
ii) a distance from the radar site beyond which this method may not be applied.

b) by correlating an observed radar position indication with an aircraft which is known to have just departed, provided that the identification is established within 2 km (1 NM) from the end of the runway used. Particular care should be taken to avoid confusion with aircraft holding over or overflying the aerodrome, or with aircraft departing from or making a missed approach over adjacent runways;

c) by transfer of identification (see 8.6.3);

d) by ascertaining the aircraft heading, if circumstances require, and following a period of track observation:

— instructing the pilot to execute one or more changes of heading of 30 degrees or more and correlating the movements of one particular radar position indication with the aircraft's acknowledged execution of the instructions given; or

— correlating the movements of a particular radar position indication with manoeuvres currently executed by an aircraft having so reported.

When using these methods, the controller shall:

i) verify that the movements of not more than one radar position indication correspond with those of the aircraft; and

ii) ensure that the manoeuvre(s) will not carry the aircraft outside the coverage of the radar or the situation display.

Note 1.— Caution must be exercised when employing these methods in areas where route changes normally take place.

Note 2.— With reference to ii) above, see also 8.6.5.1 regarding vectoring of controlled aircraft

8.6.2.4.2 Use may be made of direction-finding bearings to assist in identification of an aircraft. This method, however, shall not be used as the sole means of establishing identification, unless so prescribed by the appropriate ATS authority for particular cases under specified conditions.

8.6.3 Transfer of identification

8.6.3.1 Transfer of identification from one controller to another may only be attempted when it is considered that the aircraft is within the accepting controller's surveillance coverage.

8.6.3.2 The |AT|S provider shall ensure that transfer of identification shall be effected by one of the following methods:

a) designation of the position indication by automated means, provided that only one position indication is thereby indicated and there is no possible doubt of correct identification;

b) notification of the aircraft's discrete SSR code or aircraft address;

Note 1.— The use of a discrete SSR code requires a system of code assignment which ensures that each aircraft in a given portion of airspace is assigned a discrete code (see 8.5.2.2.7).

Note 2.— Aircraft address would be expressed in the form of the alphanumerical code of six hexadecimal characters.

c) notification that the aircraft is SSR Mode S-equipped with an aircraft identification feature when SSR Mode S coverage is available;

d) notification that the aircraft is ADS-B-equipped with an aircraft identification feature when compatible ADS-B coverage is available;

e) direct designation (pointing with the finger) of the position indication, if the two situation displays are adjacent, or if a common "conference" type of situation display is used;

Note.— Attention must be given to any errors which might occur due to parallax effects.

f) designation of the position indication by reference to, or in terms of bearing and distance from, a geographical position or navigational facility accurately indicated on both situation displays, together with the track of the observed position indication if the route of the aircraft is not known to both controllers;

Note. — Caution must be exercised before transferring identification using this method, particularly if other position indications are observed on similar headings and in close proximity to the aircraft under control. Inherent radar deficiencies, such as inaccuracies in bearing and distance of the radar position indications displayed on individual situation displays and parallax errors, may cause the indicated position of an aircraft in relation to the known point to differ between the two situation displays. The appropriate ATS authority may, therefore, prescribe additional conditions for the application of this method, e.g.:

i) a maximum distance from the common reference point used by the two controllers; and

ii) a maximum distance between the position indication as observed by the accepting controller and the one stated by the transferring controller.

g) where applicable, issuance of an instruction to the aircraft by the transferring controller to change SSR code and the observation of the change by the accepting controller; or

h) issuance of an instruction to the aircraft by the transferring controller to squawk/transmit IDENT and observation of this response by the accepting controller.

Note.— Use of procedures g) and h) requires prior coordination between the controllers, since the indications to be observed by the accepting controller are of short duration

8.6.4 Position information

8.6.4.1 The ATS provider shall ensure that position information shall be passed to aircraft in one of the following forms:

a) as a well-known geographical position;

b) magnetic track and distance to a significant point, an en-route navigation aid, or an approach aid;

c) direction (using points of the compass) and distance from a known position;

d) distance to touchdown, if the aircraft is on final approach; or

e) distance and direction from the centre line of an ATS route.

8.6.4.2 Whenever practicable, position information shall relate to positions or routes pertinent to the navigation of the aircraft concerned and shown on the situation display map.

8.6.4.3 When so informed, the pilot may omit position reports at compulsory reporting points or report only over those reporting points specified by the air traffic services unit concerned. Unless automated position reporting is in effect (e.g. ADS-C), pilots shall resume voice or CPDLC position reporting:

a) when so instructed;

b) when advised that the ATS surveillance service has been terminated; or

c) when advised that identification is lost.

8.6.5 Vectoring

8.6.5.1 The ATS provider shall ensure that Vectoring shall be achieved by issuing to the pilot specific headings which will enable the aircraft to maintain the desired track. When vectoring an aircraft, a controller shall comply with the following:

a) whenever practicable, the aircraft shall be vectored along tracks on which the pilot can monitor the aircraft position with reference to pilot-interpreted navigation aids (this will minimize the amount of navigational assistance required and alleviate the consequences resulting from an ATS surveillance system failure);

b) when an aircraft is given its initial vector diverting it from a previously assigned route, the pilot should be informed what the vector is to accomplish, and the limit of the vector should be specified when the assigned heading is such that a loss of communications may result in a safety risk (e.g. to ... position, for ... approach);

c) except when transfer of control is to be effected, aircraft shall not be vectored closer than 4.6 km (2.5 NM) or, where the minimum permissible separation is greater than 9.3 km (5 NM),

a distance equivalent to one-half of the prescribed separation minimum, from the limit of the airspace for which the controller is responsible, unless local arrangements have been made to ensure that separation will exist with aircraft operating in adjoining areas;

d) controlled flights shall not be vectored into uncontrolled airspace except in the case of emergency or in order to circumnavigate adverse meteorological conditions (in which case the pilot should be so informed), or at the specific request of the pilot; and

e) when an aircraft has reported unreliable directional instruments, the pilot shall be requested, prior to the issuance of manoeuvring instructions, to make all turns at an agreed rate and to carry out the instructions immediately upon receipt.

8.6.5.2 When vectoring an IFR flight and when giving an IFR flight a 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. When necessary, the relevant minimum vectoring altitude shall include a correction for low temperature effect.

Note 1.— 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. Detailed obstacle clearance criteria are contained in PANS-OPS (Doc 8168), Volumes I and II. See also 8.6.8.2.

Note 2.— It is the responsibility of the ATS authority to provide the controller with minimum altitudes corrected for temperature effect.

8.6.5.3 Whenever possible, minimum vectoring altitudes should be sufficiently high to minimize activation of aircraft ground proximity warning systems.

Note.— Activation of such systems will induce aircraft to pull up immediately and climb steeply to avoid hazardous terrain, possibly compromising separation between aircraft.

8.6.5.4 The ATS provider shall establish procedures to encourage operators to report incidents involving activations of aircraft ground proximity warning systems so that their locations can be identified and altitude, routing and/or aircraft operating procedures can be altered to prevent recurrences.

8.6.5.5 The ATS provider shall ensure that in terminating vectoring of an aircraft, the controller shall instruct the pilot to resume own navigation, giving the pilot the aircraft's position and appropriate instructions, as necessary, in the form prescribed in 8.6.4.2 b), if the current instructions had diverted the aircraft from a previously assigned route.

8.6.6 Navigation assistance

8.6.6.1 An identified aircraft observed to deviate significantly from its intended route or designated holding pattern shall be advised accordingly. Appropriate action shall also be taken if, in the opinion of the controller, such deviation is likely to affect the service being provided.

8.6.6.2 The pilot of an aircraft requesting navigation assistance from an air traffic control unit providing ATS surveillance services shall state the reason (e.g. to avoid areas of adverse weather or unreliable navigational instruments) and shall give as much information as possible in the circumstances.

8.6.7 Interruption or termination of ATS surveillance service

8.6.7.1 The ATS provider shall establish procedures to ensure that when the control of an identified aircraft is to be transferred to a control sector that will provide the aircraft with procedural separation, the transferring controller shall ensure that appropriate procedural separation is established between that aircraft and any other controlled aircraft before the transfer is effected.

8.6.8 Minimum levels

8.6.8.1 The ATS provider shall ensure that the controller shall at all times be in possession of full and up-to-date information regarding:

a) established minimum flight altitudes within the area of responsibility;

b) the lowest usable flight level or levels determined in accordance with Chapters 4 and 5; and

c) established minimum altitudes applicable to procedures based on tactical vectoring

8.6.8.2 Unless otherwise specified by the ATS provider, minimum altitudes for procedures based on tactical vectoring with any ATS surveillance system shall be determined using the criteria applicable to tactical radar vectoring.

8.7 Use of ATS Surveillance Systems in the Air Traffic Control Service

8.7.1 Separation application

8.7.1.1 When control of an identified aircraft is to be transferred to a control sector that will provide the aircraft with procedural separation, such separation shall be established by the transferring controller before the aircraft reaches the limits of the transferring controller's area of responsibility, or before the aircraft leaves the relevant area of surveillance coverage

8.7.1.2 When authorized by the ATS provider, separation based on the use of ADS-B, SSR and/or MLAT, and/or PSR position symbols and/or PSR blips shall be applied so that the distance between the centres of the position symbols and/or PSR blips, representing the positions of the aircraft concerned, is never less than a prescribed minimum.

8.7.1.3 In no circumstances shall the edges of the position indications touch or overlap unless vertical separation is applied between the aircraft concerned, irrespective of the type of position indication displayed and separation minimum applied.

8.7.1.4 The separation minimum or minima based on radar and/or ADS-B and/or MLAT systems to be applied shall be prescribed by the ATS provider according to the capability of the particular ATS surveillance system or sensor to accurately identify the aircraft position in relation to the centre of a position symbol, PSR blip, SSR response and taking into account factors which may affect the accuracy of the ATS surveillance system-derived information, such as aircraft range from the radar site and the range scale of the situation display in use.

8.7.1.4.1 Such separation minima shall be selected from specified from those prescribed by the provisions of the PANS-ATM (Doc 4444) and the Regional Supplementary Procedures as applicable under the prevailing circumstances

8.7.1.5 Separation based on the use of SSR responses shall be applied so that the distance between the closest edges of the SSR responses (of the centres, when authorized by the appropriate ATS authority) is never less than a prescribed minimum.

8.7.1.6 Application of ATS surveillance system separation minima based on radar and/or ADS-B and/or MLATsystems between holding aircraft and other flights shall be subject to requirements and procedures prescribed by the ATS provider.

8.7.2 Separation minima based on ATS surveillance systems

8.7.2.1 The ATS provider shall ensure that the selection of separation minima based on ATS surveillance systems shall be selected from those priscribed from Doc.4444 and regional suplimentary procedures.

8.7.2.2 The ATS provider shall ensure that an alternate means of communication shall be available to allow the controller to intervene and resolve a conflict within a total time of nine minutes, should the normal means of communication fail.

8.7.3.3 The separation minimum or minima based on radar and/or ADS-B and/or MLAT systems to be applied

shall be prescribed by the ATS provider according to the capability of the particular ATS surveillance system or sensor to accurately identify the aircraft position in relation to the centre of a position symbol, PSR blip, SSR response and taking into account factors which may affect the accuracy of the ATS surveillance system-derived information, such as aircraft range from the radar site and the range scale of the situation display in use.

8.8 Emergencies, Hazards and Equipment Failures

8.8.1 Emergencies

8.8.1.1 The ATS provider shall ensure that in the event of an aircraft in, or appearing to be in, any form of emergency, every assistance shall be provided by the controller, and the procedures prescribed herein may be varied according to the situation.

8.8.1.2 The ATS provider shall ensure that progress of an aircraft in emergency is monitored and (whenever possible) plotted on the situation display until the aircraft passes out of coverage of the ATS surveillance system, and position information shall be provided to all air traffic services units which may be able to give assistance to the aircraft. Transfer to adjacent sectors shall also be effected when appropriate.

8.8.2 Collision hazard information

8.8.2.1 When an identified controlled flight is observed to be on a conflicting path with an unknown aircraft deemed to constitute a collision hazard, the pilot of the controlled flight shall, whenever practicable:

a) be informed of the unknown aircraft, and if so requested by the controlled flight or if, in the opinion of the controller, the situation warrants, a course of avoiding action should be suggested; and

b) be notified when the conflict no longer exists.

8.8.2.2 The ATS provider shall ensure that when the pressure-altitude-derived level information has been verified, the information shall be passed to pilots in a clear and unambiguous manner. If the level information has not been verified, the accuracy of the information should be considered uncertain and the pilot shall be informed accordingly.

8.8.3 Failure of equipment

8.8.3.1 Aircraft Radio Transmitter Failure

8.8.3.1.1 The ATS provider shall ensure that if two-way communication is lost with an aircraft, the controller should determine whether or not the aircraft's receiver is functioning by instructing the aircraft on the channel so far used to acknowledge by making a specified manoeuvre and by observing the aircraft's track, or by instructing the aircraft to operate IDENT or to make SSR code and/or ADS-B transmission changes.

Note 1.— Transponder-equipped aircraft experiencing radiocommunication failure will operate the transponder on Mode A Code 7600.

8.8.3.1.2 The ATS provider shall ensure that if the action prescribed in 8.8.3.1.1 is unsuccessful, it shall be repeated on any other available channel onwhich it is believed that the aircraft might be listening.

8.8.3.1.3 In both the cases covered by 8.8.3.1.1 and 8.8.3.1.2, any manoeuvring instructions shall be such that the aircraft would regain its current cleared track after having complied with the instructions received.

8.8.3.2 Complete aircraft communication failure

8.8.3.2.1 When a controlled aircraft experiencing complete communication, failure is operating or expected to operate in an area and at flight levels where an ATS surveillance service is applied, separation specified in 8.7.3 may continue to be used. However, if the aircraft experiencing the communication failure is not identified, separation shall be applied between identified aircraft and all unidentified aircraft observed along the expected route of the aircraft with the communication failure, until such time as it is known, or can safely be assumed, that the aircraft with radiocommunication failure has passed through the airspace concerned, has landed, or has proceeded elsewhere.

8.8.4 ATS surveillance system failure

8.8.4.1 The ATS provider shall ensure that 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.

8.8.5 Degradation of aircraft position source data

In order to reduce the impact of a degradation of aircraft position source data, for example, a receiver autonomous integrity monitoring (RAIM) outage for GNSS, the ATS provider shall establish contingency procedures to be followed by control positions and ATC units in the event of data degradation.

8.8.6 Ground radio failure

8.8.6.1 The ATS provider shall ensure that in the event of complete failure of the ground radio equipment used for control, the controller shall, unless able to continue to provide the ATS surveillance service by means of other available communication channels, proceed as follows:

a) without delay inform all adjacent control positions or ATC units, as applicable, of the failure;

b) apprise such positions or units of the current traffic situation;

c) request their assistance, in respect of aircraft which may establish communications with those positions or units, in establishing and maintaining separation between such aircraft; and

d) instruct adjacent control positions or ATC units to hold or re-route all controlled flights outside the area of responsibility of the position or ATC unit that has experienced the failure until such time that the provision of normal services can be resumed.

8.9 Use of ATS Surveillance Systems in the approach control service

8.9.1 General provisions

8.9.1.1 ATS surveillance systems used in the provision of approach control service shall be appropriate to the functions and level of service to be provided.

8.9.2 General approach control procedures using ATS surveillance systems

8.9.2.1 The ATS provider shall establish procedures to ensure that the aerodrome controller is kept informed of the sequence of arriving aircraft, 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.

8.9.2.2 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.

8.9.2.3 The controller shall advise an aircraft being vectored for an instrument approach of its position at least once prior to commencement of final approach.

8.9.2.4 When giving distance information, the controller shall specify the point or navigation aid to which the nformation refers.

8.9.4 Vectoring to pilot-interpreted final approach aid

8.9.4.1 An aircraft vectored to intercept a pilot-interpreted final approach aid shall be instructed to report when established on the final approach track.

8.9.4.2 The ATS provider shall ensure that when clearance for the approach is issued, aircraft shall maintain the last assigned level until intercepting the specified or nominal glide path of the approach procedure. If ATC requires an aircraft to intercept the glide path at a level other than a level flight segment depicted on the instrument approach chart, ATC shall instruct the pilot to maintain the particular level until established on the glide path.

8.9.4.3 The ATS provider shall ensure that the controller shall be responsible for maintaining separation specified in 8.7.3 between succeeding aircraft on the same final approach, except that the responsibility may be transferred to the aerodrome controller in accordance with procedures prescribed by the appropriate ATS authority and provided an ATS surveillance system is available to the aerodrome controller.

8.9.4.4 The ATS provider shall ensure that transfer of control of succeeding aircraft on final approach to the aerodrome controller shall be effected in accordance with procedures prescribed by the ATS provider.

8.9.5 Vectoring for visual approach

8.9.5.1 The ATS provider shall ensure that clearance for visual approach shall be issued only after the pilot has reported the aerodrome or the preceding aircraft in sight, at which time vectoring would normally be terminated.

8.9.6 Radar approaches

8.9.6.1 General Provisions

8.9.6.1.1 Controllers conducting radar approaches shall be in possession of information regarding the obstacle clearance altitudes/heights established for the types of approach to be conducted.

8.9.6.1.2 The ATS provider shall ensure that prior to commencement of a radar approach, the aircraft shall be informed of:

a) the runway to be used;

b) the applicable obstacle clearance altitude/height;

c) the angle of the nominal glide path and, if so prescribed by the appropriate ATS authority or requested by the aircraft, the approximate rate of descent to be maintained;

d) the procedure to be followed in the event of radiocommunication failure, unless the procedure has been published in AIPs.

8.9.7 Final approach procedures

8.9.7.1 Surveillance Radar Approach

8.9.7.1.1 The ATS provider shall ensure that a surveillance radar approach shall only be performed with approved equipment suitably sited and a situation display specifically marked to provide information on position relative to the extended centre line of the runway to be used and distance from touchdown.

Chapter 9: FLIGHT INFORMATION SERVICE AND ALERTING SERVICE

9.1. Flight Information Service

9.1.1 Recording and transmission of information on the progress of flights

9.1.1.1 The ATS provider shall ensure that 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, when so required in accordance with Chapter 10, 10.2.2.

9.1.2 Transfer of responsibility for the provision of flight information service

9.1.2.1 The ATS provider shall ensure that the responsibility for the provision of flight information service to a flight passes from the ACC in Kigali FIR to the appropriate ATS unit in the adjacent FIR at the time of crossing the common FIR boundary. However, when coordination is required in accordance with Chapter 10, 10.2, but communication facilities are inadequate, the Kigali ACC 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 it is entering.

9.1.3 Transmission of information

9.1.3.1 Means of Transmission

9.1.3.1.1 Except as provided in 9.1.3.2.1, information shall be disseminated to aircraft by one or more of the following means as determined by the ATS provider:

a) the preferred method of directed transmission on the initiative of the appropriate ATS unit to an aircraft, ensuring that receipt is acknowledged; or

b) a general call, unacknowledged transmission to all aircraft concerned; or

c) broadcast; or

d) data link.

Note. — It should be recognized that in certain circumstances, e.g. during the last stages of a final approach, it may be impracticable for aircraft to acknowledge directed transmissions.

9.1.3.1.2 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, a change of the runway-in-use, or the failure of a key approach and landing aid.

9.1.3.2 Transmission of Special Air-Reports, Sigmet and airmet information

9.1.3.2.1 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 9.1.3.1.1 as determined on the basis of regional air navigation agreements. Special air-reports shall be disseminated to aircraft for a period of 60 minutes after their issuance.

9.1.3.3 Transmission of Information Concerning Volcanic Activity

9.1.3.3.1 Information concerning pre-eruption volcanic activity, volcanic eruptions and volcanic ash clouds (position of clouds and flight levels affected) shall be disseminated to aircraft by one or more of the means specified in 9.1.3.1.1 as determined on the basis of regional air navigation agreements

9.1.3.4 Transmission of Information concerning radioactive materials and toxic chemical clouds

9.1.3.4.1 Information on the release into the atmosphere of radioactive materials or toxic chemicals which could affect airspace within the area of responsibility of the ATS unit shall be transmitted to aircraft by one or more of the means specified in 9.1.3.1.1.

9.1.3.4 Transmission of information concerning radioactive materials and Toxic Chemical Clouds

9.1.3.4.1 Information on the release into the atmosphere of radioactive materials or toxic chemicals which could affect airspace within the area of responsibility of the ATS unit shall be transmitted to aircraft by one or more of the means specified in 9.1.3.1.1.

9.1.3.5 Transmission of Speci and amended Taf

9.1.3.5.1 Special reports in the SPECI code form and amended TAF shall be transmitted on request and supplemented by:

a) directed transmission from the Aerodrome cotrol unit of selected special reports and amended TAF for the departure, destination and its alternate aerodromes, as listed in the flight plan; or

b) a general call on appropriate frequencies for the unacknowledged transmission to affected aircraft of selected special reports and amended TAF; or

c) continuous or frequent broadcast or the use of data link to make available current METAR and TAF in areas determined on the basis of regional air navigation agreements where traffic congestion dictates. VOLMET broadcasts and/or D-VOLMET should be used to serve this purpose

9.1.3.6 Transmission of information on Heavy or Medium Unmanned Free Balloons

9.1.3.6.1The ATS provider shall ensure that appropriate information on heavy or medium unmanned free balloons shall be disseminated to aircraft by one or more of the means specified in 9.1.3.1.1.

9.1.3.7 Transmission of information concerning Space Weather Activity

9.1.3.7.1 The ATS provider shall ensure that information on space weather phenomena that have an impact on high frequency radio communications, communications via satellite, GNSS-based navigation and surveillance systems, and/or pose a radiation risk to aircraft occupants at flight levels within the area of responsibility of the ATS unit, shall be transmitted to the affected aircraft by one or more of the means specified in 9.1.3.1.1.

9.2.1 Aircraft

Note.— It is recognized that in certain circumstances aircraft on final approach, landing, take-off and climb may require to receive without delay essential information other than that pertaining to the provision of air traffic control service

9.2.1.1 The ATSprovider shall ensure that when so required to facilitate the provision of alerting and search and rescue services, an aircraft, prior to and when operating within or into designated areas or along designated routes, shall comply with the provisions detailed in part 40 of civil aviation regulations, concerning the submission, completion, changing and closing of a flight plan.

9.2.1.2 In addition to the above, aircraft equipped with suitable two-way radiocommunications shall report during the period twenty to forty minutes following the time of last contact, whatever the purpose of such contact, merely to indicate that the flight is progressing according to plan, such report to comprise identification of the aircraft and the words “Operations normal” or the signal QRU.

9.2.1.3 The “Operations normal” message shall be transmitted air-ground to an appropriate air traffic services unit (e.g. normally to the aeronautical telecommunication station serving the air traffic services unit in charge of the FIR in which the aircraft is flying, otherwise to another aeronautical telecommunication station to be retransmitted as required to the air traffic services unit in charge of the FIR).

9.2.2 Air traffic services units

9.2.2.1 The ATS provider shall ensure that when alerting service is required in respect of a flight operated through more than one FIR or control area, and when the position of the aircraft is in doubt, responsibility for coordinating such service shall rest with the ATS unit of the FIR or control area:

a) within which the aircraft was flying at the time of last air-ground radio contact;

b) that the aircraft was about to enter when last air-ground contact was established at or close to the boundary of two FIRs or control areas;

c) within which the aircraft's intermediate stop or final destination point is located:

1) if the aircraft was not equipped with suitable two-way radiocommunication equipment; or

2) was not under obligation to transmit position reports.

9.2.2.2 The unit responsible for alerting service, in accordance with 9.2.2.2, shall:

a) notify units providing alerting service in other affected FIRs or control areas of the emergency phase or phases, in addition to notifying the rescue coordination centre associated with it;

b) request those units to assist in the search for any useful information pertaining to the aircraft presumed to be in an emergency, by all appropriate means and especially those indicated in part 22 of civil aviation regulations (Use of communication facilities);

c) collect the information gathered during each phase of the emergency and, after verifying it as necessary, transmit it to the rescue coordination centre;

d) announce the termination of the state of emergency as circumstances dictate.

9.2.2.3 In obtaining the necessary information as required, attention shall particularly be given to informing the rescue coordination centre of the distress frequencies available to survivors, as listed in Item 19 of the flight plan but not normally transmitted.

Chapter 10: COORDINATION

10.1 Coordination in respect of the provision of Air Traffic Control Service

10.1.1 General

10.1.1.1 The ATS provider shall ensure that the coordination and transfer of control of a flight between successive ATC units and control sectors shall be effected by a dialogue 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

10.1.1.2The ATS provider shall ensure that such coordination procedures shall conform to the procedures contained in the following provisions and be specified in letters of agreement and local instructions, as applicable.

10.1.1.3 The ATS provider shall ensure that 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 system 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.

10.1.2 Coordination between ATC units providing air traffic service within contiguous control areas

10.1.2.1 General

10.1.2.1.1 The ATS provider shall ensure that ATC units shall forward from unit to unit, as the flight progresses, necessary flight plan and control information. When so required by agreement between the appropriate ATS authorities to assist in the separation of aircraft, flight plan and flight progress information for flights along specified routes or portions of routes in close proximity to flight information region boundaries shall also be provided to the ATC units in charge of the flight information regions adjacent to such routes or portions of routes.

10.1.2.1.2 The flight plan and control information shall be transmitted in sufficient time to permit reception and analysis of the data by the receiving unit(s) and necessary coordination between the units concerned.

10.1.2.2 Transfer of Control

10.1.2.2.1 The ATS provider shall ensure that the responsibility for the control of an aircraft shall be transferred from the ATC unit to the next unit at the time of crossing the common control area boundary as determined by the unit having control of the aircraft or at such other point or time as has been agreed between the two units.

10.1.2.2.2 The ATS provider shall ensure that where specified in letters of agreement between the ATC units concerned, and when transferring an aircraft, the transferring unit shall notify the accepting unit that the aircraft is in position to be transferred, and specify that the responsibility for control should be assumed by the accepting unit forthwith at the time of crossing the control boundary or other transfer control point specified in letters of agreement between the ATC units or at such other point or time coordinated between the two units.

10.1.2.2.3 The ATS provider shall ensure that if the transfer of control time or point is other than forthwith, the accepting ATC unit shall not alter the clearance of the aircraft prior to the agreed transfer of control time or point without the approval of the transferring unit.

10.1.2.2.4 The ATS provider shall ensure that if transfer of communication is used to transfer an aircraft to a receiving ATC unit, responsibility for control shall not be assumed until the time of crossing the control area boundary or other transfer of control point specified in letters of agreement between the ATC units.

10.1.2.2.5 The ATS provider shall ensure that when transfer of control of identified aircraft is to be effected and the appropriate procedures shall be specified and applied.

10.1.2.3 Approval Requests

10.1.2.3.1 The ATS provider shall ensure that if the flying time from the departure aerodrome of an aircraft to the boundary of an adjacent control area is less than the specified minimum required to permit transmission of the necessary flight plan and control information to the accepting ATC unit after take-off and allow adequate time for reception, analysis and coordination, the transferring ATC unit shall, operator, forward that information to the accepting ATC unit together with a request for approval. The required time period shall be specified in letters of agreement or local instructions, as appropriate. In the case of revisions to a previously transmitted current flight plan, and control data being transmitted earlier than this specified time period, no approval from the accepting ATC unit shall be required.

10.1.2.3.2 The ATS provider shall ensure that in the case of an aircraft in flight requiring an initial clearance when the flying time to the boundary of an adjacent control area is less than a specified minimum, the aircraft shall be held within the transferring ATC unit's control area until the flight plan and control information have been forwarded together with a request for approval, and coordination effected, with the adjacent ATC unit.

10.1.2.3.3 The ATS provider shall ensure that in the case of an aircraft requesting a change in its current flight plan, or of a transferring ATC unit proposing to change the current flight plan of an aircraft, and the flying time of the aircraft to the control area boundary is less than a specified minimum, the revised clearance shall be withheld pending approval of the proposal by the adjacent ATC unit.

10.1.2.3.4 When boundary estimate data are to be transmitted for approval by the accepting unit, the time in respect of an aircraft not yet departed shall be based upon the estimated time of departure as determined by the ATC unit in whose area of responsibility the departure aerodrome is located. In respect of an aircraft in flight requiring an initial clearance, the time shall be based on the estimated elapsed time from the holding fix to the boundary plus the time expected to be needed for coordination.

10.1.2.3.5 The ATS provider shall ensure that the conditions, including specified flying times, under which approval requests is to be forwarded, shall be specified in letters of agreement or local instructions as appropriate.

10.1.2.4 Transfer of Communication

10.1.2.4.1 The ATS provider shall ensure that, except when separation minima specified are being applied, the transfer of air-ground communications of an aircraft from the transferring to the accepting ATC unit shall be made five minutes before the time at which the aircraft is estimated to reach the common control area boundary, unless otherwise agreed between the two ATC units concerned.

10.1.2.4.2 The ATS provider shall ensure that when separation minima specified are being applied at the time of transfer of control, the transfer of air-ground communications of an aircraft from the transferring to the accepting ATC unit shall be made immediately after the accepting ATC unit has agreed to assume control.

10.1.2.4.3 The accepting ATC unit shall normally not be required to notify the transferring unit that radio and/or data communication has been established with the aircraft being transferred and that control of the aircraft has been assumed, unless otherwise specified by agreement between the ATC units concerned. The accepting ATC unit shall notify the transferring unit in the event that communication with the aircraft is not established as expected.

10.1.2.4.4 The ATS provider shall ensure that intermediate unit shall retain responsibility for coordination and for ensuring that separation is maintained between all traffic within its area of responsibility.

10.1.2.5 Termination of Controlled Flight

10.1.2.5.1 The ATS provider shall ensure that in the case where a flight ceases to be operated as a controlled flight, the ATC unit shall ensure that appropriate information on the flight is forwarded to ATS unit(s) responsible for the provision of flight information and alerting services for the remaining portion of the flight, in order to ensure that such services will be provided to the aircraft.

10.1.3 Coordination between a unit providing area control service and a unit providing approach control service

10.1.3.1 Division of Control between a unit providing area control service and a unit providing approach control service

101.3.1.1 The ATS provider shall ensure that except when otherwise specified in letters of agreement or local instructions, or by the ACC, a unit providing approach control service may issue clearances to any aircraft released to it by an ACC without reference to the ACC. However, when an approach has been missed the ACC shall, if affected by the missed approach, be advised immediately and subsequent action coordinated between the ACC and the unit providing approach control service as necessary.

10.1.3.1.2 An ACC may, after coordination with the unit providing approach control service, release aircraft directly to aerodrome control towers if the entire approach will be made under visual meteorological conditions.

10.1.3.2 Take-Off and Clearance Expiry Times

10.1.3.2.1 The ATS provider shall ensure that time of take-off shall be specified by the ACC when it is necessary to:

a) Coordinate the departure with traffic not released to the unit providing approach control service; and

b) Provide en-route separation between departing aircraft following the same track.

10.1.3.2.2 The ATS provider shall ensure that if time of take-off is not specified, the unit providing approach control service shall determine the take-off time when necessary to coordinate the departure with traffic released to it.

10.1.3.2.3 The ATS provider shall ensure that a clearance expiry time shall be specified by the ACC if a delayed departure would conflict with traffic not not released to the unit providing approach control service. If, for traffic reasons of its own, a unit providing approach control service has to specify in addition its own clearance expiry time, this shall not be later than that specified by the ACC.

10.1.3.3 Exchange of Movement and Control Data

10.1.3.3.1 The ATS provider shall ensure that the unit providing approach control service shall keep the ACC promptly advised of pertinent data on controlled traffic such as:

a) Runway (s)-in-use and expected type of instrument approach procedure;

b) Lowest vacant level at the holding fix available for use by the ACC;

c) Average time interval or distance between successive arrivals as determined by the unit providing approach control service;

d) revision of the expected approach time issued by the ACC when the calculation of the expected approach time by the unit providing approach control service indicates a variation of five minutes or such other time as has been agreed between the two ATC units concerned;

e) Arrival times over the holding fix when these vary by three minutes, or such other time as has been agreed between the two ATC units concerned, from those previously estimated;

f) Cancellations by aircraft of IFR flight, if these will affect levels at the holding fix or expected approach times of other aircraft;

g) Aircraft departure times or, if agreed between the two ATC units concerned, the estimated time at the control area boundary or other specified point;

h) All available information relating to overdue or unreported aircraft;

i) Missed approaches which may affect the ACC.

10.1.3.3.2 The ATS provider shall ensure that the ACC shall keep the unit providing approach control service promptly advised of pertinent data on controlled traffic such as:

a) Identification, type and point of departure of arriving aircraft;

b) Estimated time and proposed level of arriving aircraft over holding fix or other specified point;

c) Actual time and proposed level of arriving aircraft over holding fix if aircraft is released to the unit providing approach control service after arrival over the holding fix;

d) Requested type of IFR approach procedure if different to that specified by the approach control unit;

e) Expected approach time issued;

f) When required, statement that aircraft has been instructed to contact the unit providing approach control service;

g) when required, statement that an aircraft has been released to the unit providing approach control service including, if necessary, the time and conditions of release;

h) Anticipated delay to departing traffic due to congestion.

10.1.3.3.3 The ATS provider shall ensure that iInformation on arriving aircraft shall be forwarded not less than fifteen minutes before estimated time of arrival and such information shall be revised as necessary.

10.1.4 Coordination between a unit providing approach control service and a unit providing aerodrome control service

10.1.4.1 Division of Control between a unit providing approach control service and a unit providing aerodrome control service

10.1.4.1.1 The ATS provider shall ensure that a unit providing approach control service shall retain control of arriving aircraft until such aircraft have been transferred to the aerodrome control tower and are in communication with the aerodrome control tower. Letters of agreement or local instructions, appropriate to the airspace structure, terrain, meteorological conditions and ATS facilities available, shall establish rules for the transfer of arriving aircraft.

10.1.4.1.2 Aerodrome control towers shall, when so prescribed in letters of agreement or local instructions, obtain approval from the unit providing approach control service prior to authorizing operation of special VFR flights.

10.1.4.2 Exchange of Movement and Control Data between unit providing Approach control service and Aerodrome control tower.

10.1.4.2.1 The ATS provider shall ensure that an aerodrome control tower shall keep the unit providing approach control service promptly advised of pertinent data on relevant controlled traffic such as:

a) Arrival and departure times;

b) When required, statement that the first aircraft in an approach sequence is in communication with and is sighted by the aerodrome control tower, and that reasonable assurance exists that a landing can be accomplished;

c) All available information relating to overdue or unreported aircraft;

d) Information concerning missed approaches;

e) Information concerning aircraft that constitute essential local traffic to aircraft under the control of the unit providing approach control service.

10.1.4.2.2 The ATS provider shall ensure that the unit providing approach control service shall keep the aerodrome control tower promptly advised of pertinent data on controlled traffic such as:

a) Estimated time and proposed level of arriving aircraft over the aerodrome, at least fifteen minutes prior to estimated arrival;

b) When required, a statement that an aircraft has been instructed to contact the aerodrome control tower and that control shall be assumed by that unit;

c) Anticipated delay to departing traffic due to congestion.

10.1.5 Coordination between control positions within the same unit

10.1.5.1 The ATS provider shall ensure that flight plan and control information shall be exchanged between control positions within the same air traffic control unit, in respect of:

a) All aircraft for which responsibility for control will be transferred from one control position to another;

b) Aircraft operating in such close proximity to the boundary between control sectors that control of traffic within an adjacent sector may be affected;

c) All aircraft for which responsibility for control has been delegated by a controller using procedural methods to a controller using an ATS surveillance system, as well as other aircraft affected.

10.1.5.2 The ATS provider shall establish procedures for coordinatio and transfer of control between control sectors within the same ATC unit shall applicable to the ATC units.

10.1.6 Failure of automated coordination

10.1.6.1 The ATS provider shall ensure that the failure of automated coordination shall be presented clearly to the controller responsible for coordinating the flight at the transferring unit. This controller shall then facilitate the required coordination using prescribed alternative methods

10.2 Coordination in respect of the provision of Flight Information Service and Alerting Service

10.2.1 The ATS provider shall ensure that where necessary, coordination between ATS units providing flight information service in adjacent FIRs shall is effected in respect of IFR and VFR flights, in order to ensure continued flight information service to such aircraft in specified areas or along specified routes. Such coordination shall be effected in accordance with an agreement between the ATS units concerned.

10.2.2 The ATS provider shall ensure that where coordination of flights is effected in accordance with 10.2.1, this shall include transmission of the following information on the flight concerned:

a) Appropriate items of the current flight plan; and

b) The time at which last contact was made with the aircraft concerned.

10.2.3 The ATS provider shall ensure that this information shall be forwarded to the ATS unit in charge of the next FIR in which the aircraft will operate prior to the aircraft entering such FIR.

10.2.4 The ATS provider shall ensure that when so required by agreement between the appropriate ATS authorities to assist in the identification of strayed or unidentified aircraft and thereby eliminate or reduce the need for interception, flight plan and flight progress information for flights along specified routes or portions of routes in close proximity to FIR boundaries shall also be provided to the ATS units in charge of the FIRs adjacent to such routes or portions of routes.

10.2.5 The ATS provider shall ensure that in circumstances where an aircraft has declared minimum fuel or is experiencing an emergency or in any other situation wherein the safety of the aircraft is not assured, the type of emergency and/or 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.

10.3 Coordination In respect of the Provision of Air Traffic Advisory Service

10.3.1 ATS units providing air traffic advisory service shall apply the coordination procedures specified in Section 10.1 with respect to such aircraft having elected to use this type of service.

10.4 Coordination between Air Traffic Services Units and Aeronautical Telecommunication Stations

10.4.1 The ATS provider shall ensure that arrangement is made between the ATS units and the aeronautical telecommunications stations serving the units regarding the provision of CNS/ATM systems, information sharingon facilities status from either ATS units or Aeronautical Telecommunication office. The ATS units shall ensure, unless otherwise provided, information to be made available shall comprise the identification of the aircraft (including SELCAL code, when necessary), the route or destination (where necessary), and the expected or actual time of communications transfer.

Chapter 11: AIR TRAFFIC SERVICES MESSAGES

11.1 Categories of Messages

11.1.1 General

11.1.1.1 The ATS provider shall ensure that in accordance with the requirements in Chapter 10 — *Coordination*, the messages listed below are authorized for transmission via the aeronautical fixed service (including the aeronautical telecommunication network (ATN) and the aeronautical fixed telecommunication network (AFTN), Aeronautical Message Handling system (AMHS) and direct-speech circuits. They are classified in categories relating to their use by the air traffic services and providing an approximate indication of their importance.

Note.— The Priority Indicator in parentheses after each type of message is that specified in Annex 10 (Volume II, Chapter 4) for application when the message is transmitted on the AFTN. The priority for all ATS interfacility data communication (AIDC) messages using the ATN shall be "normal priority flight safety messages" *as determined by the ATN Internet protocol priority categorization.*

11.1.2 Emergency messages

11.1.2.1 This category comprises:

a) distress messages and distress traffic, including messages relating to a distress phase (SS);

b) urgency messages, including messages relating to an alert phase or to an uncertainty phase (DD);

c) other messages concerning known or suspected emergencies which do not fall under a) or b) above, and radiocommunication failure messages (FF or higher as required).

Note.— When the messages in a) and b) and, if required, in c) above are filed with the public telecommunication service, the Priority Indicator SVH, assigned to telegrams relating to the safety of life, is to be used in accordance with Article 25 of the International Telecommunication Convention, Malaga, 1973.

11.1.3 Movement and control messages

11.1.3.1 This category comprises:

a) movement messages (FF), including:

— filed flight plan messages

— delay message

—modification messages

— flight plan cancellation messages

— departure messages

— arrival messages;

b) coordination messages (FF), including:

— current flight plan messages

— estimate messages

— coordination messages

— acceptance messages

— logical acknowledgement messages;

c) supplementary messages (FF), including:

— request flight plan messages

— request supplementary flight plan messages

— supplementary flight plan messages;

d) AIDC messages, including:

— notification messages

— coordination messages

— transfer of control messages

— general information messages

— application management messages;

e) control messages (FF), including:

— clearance messages

— flow control messages

— position-report and air-report messages.

11.1.4 Flight information messages

11.1.4.1 This category comprises:

a) messages containing traffic information (FF);

b) messages containing meteorological information (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).

11.2 General Provisions

Note.— The use in this chapter of expressions such as "originated", "transmitted", "addressed" *or* "received" *does not necessarily imply that reference is made to a teletypewriter or digital data interchange for a computer-to-computer message. Except where specifically indicated, the messages described in this chapter may also be transmitted by voice, in which case the four terms above represent "initiated", "spoken by", "spoken to" and "listened to" respectively.*

11.2.1 Origination and addressing of messages

11.2.1.1 General

Note. — Movement messages in this context comprise flight plan messages, departure messages, delay messages, arrival messages, cancellation messages and position-report messages and modification messages relevant thereto.

11.2.1.1.1The ATS provider shall ensure that messages for ATS purposes shall be originated by the appropriate ATS units or by aircraft as specified in Section 11.3, except that, through special local arrangements, ATS units may delegate the responsibility for originating movement messages to the pilot, the operator, or its designated representative.

Note 1.— Such delegation may be effected by publication in the relevant AIP, by agreement with operators concerned or by FF-ICE services as described in 17.4.3.1.
Note 2.— Guidance on origination of movement messages for FF-ICE services implementation is in the Manual on Flight and Flow — Information for a Collaborative Environment (FF-ICE) (Doc 9965).

11.2.1.1.2 Origination of movement, control and flight information messages for purposes other than air traffic services (e.g. operational control) shall, except as provided for in 22.260 of civil aviation regulations, be the responsibility of the pilot, the operator, or a designated representative.

11.2.1.1.3 Flight plan messages, amendment messages related thereto and flight plan cancellation messages shall, except as provided in 11.2.1.1.4, be addressed only to those ATS units which are specified in the provisions of 11.4.2. Such messages shall be made available to other ATS units concerned, or to specified positions within such units and to any other addressees of the messages, in accordance with local arrangements.

11.2.1.1.4 The ATS provider shall ensure that when so requested by the operator concerned, emergency and movement messages which are to be transmitted simultaneously to ATS 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;

such addressees to be specified by the operator or its designated representative.

11.2.1.1.5 The ATS provider shall ensure that when so requested by the operator concerned, movement messages transmitted progressively between ATS 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 its designated representative in accordance with agreed local procedures.

11.2.1.2 Use of the AFTN

11.2.1.2.1 ATS messages to be transmitted via the AFTN shall contain:

a) information in respect of the priority with which they are to be transmitted and the addressees to whom they are to be delivered, and an indication of the date and time at which they are filed with the aeronautical fixed station concerned and of the Originator Indicator

b) the ATS data, preceded if necessary by the supplementary address information described in 11.2.1.2.6, and prepared in accordance with Appendix 7. These data will be transmitted as the text of the AFTN message.

11.2.1.2.2 *PRIORITY INDICATOR*

11.2.1.2.2.1 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 11.1.

Note. — It is prescribed in Annex 10 (Volume 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

11.2.1.2.3 *ADDRESS*

11.2.1.2.3.1 This shall consist of a sequence of Addressee Indicators, one for each addressee to whom the message is to be delivered.

11.2.1.2.3.2 Each Addressee Indicator shall consist of an eight-letter sequence comprising, in the following order:

a) the ICAO four-letter location indicator assigned to the place of destination;

Note.— A list of ICAO location indicators is contained in Doc 7910 — Location Indicators.

b) i) the ICAO three-letter designator identifying the aeronautical authority, service or aircraft operating agency addressed, or

ii) in cases where no designator has been assigned, one of the following:

— “YXY” in the case where the addressee is a military service/organization,

— "ZZZ" in the case where the addressee is an aircraft in flight,

— "YYY" in all other cases;

c) i) the letter X, or

ii) the one-letter designator identifying the department or division of the organization addressed.

11.2.1.2.3.3 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):

— if the message is relevant to an IFR flight	ZQZ
— if the message is relevant to a VFR flight	ZFZ
—Aerodrome control tower	ZTZ
—Air traffic services reporting office	ZPZ

Other three-letter designators for ATS units shall not be used for that purpose

11.2.1.2.4 *Filing Time*

11.2.1.2.4.1The 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**.2.1.2.5** ***Originator Indicator***

11.2.1.2.5.1 The Originator Indicator shall consist of an eight-letter sequence, similar to an Addressee Indicator identifying the place of origin and the organization originating the message.

11.2.1.2.6 ***Supplementary Information on the Address and the Origin***

11.2.1.2.6.1 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 11.2.1.2.3.2 b) ii)) are used:

a) the name of the organization 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 are 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

11.2.2 Preparation and transmission of messages

11.2.2.1 Except as provided for in 11.2.2.2, ATS messages shall be prepared and transmitted with standard texts in a standard format and in accordance with standard data conventions, as and when prescribed in Appendix 7.

11.2.2.2 The ATS provider shall ensure that where appropriate, the messages prescribed in Appendix 7 shall be supplemented with, and/or replaced by, AIDC messages prescribed in Appendix 6 of ICAO Doc.4444, on the basis of regional air navigation agreements.

11.2.2.2.1 The ATS provider shall ensure that where AIDC messages are transmitted via the ATN, the messages shall utilize the packed encoding rules using *abstract syntax notation one* (ASN.1).

11.2.2.2.2 The ATS provider shall ensure that where AIDC messages are transmitted via the AFTN, the format for the AIDC messages shall, as far as practicable, comply with the appropriate data conventions contained in Appendix 7. AIDC data fields to be transmitted via the AFTN that are inconsistent with, or additional to, the data conventions contained in Appendix 7 shall be provided for on the basis of regional air navigation agreements.

11.2.2.3 The ATS provider shall ensure that when messages are exchanged orally between the relevant ATS units, an oral acknowledgement shall constitute evidence of receipt of the message. No confirmation in written form directly between controllers shall thereforebe required. The confirmation of coordination via the exchange of messages between automated systems shall be required unless special arrangements have been made between the units concerned.

11.3 Methods of Message Exchange

11.3.1 The ATS provider shall ensure that the lead-time requirements of air traffic control and flow control procedures shall determine the method of message exchange to be used for the exchange of ATS data.

11.3.1.1 The method of message exchange shall also be dependent upon the availability of adequate communications channels, the function to be performed, the types of data to be exchanged and the processing facilities at the centres concerned.

11.3.2 The ATS provider shall ensure that basic flight plan data necessary for flow control procedures shall be furnished at least 60 minutes in advance of the flight. Basic flight plan data shall be provided by either a filed flight plan or a repetitive flight plan submitted by mail in the

form of a repetitive flight plan listing form or other media suitable for electronic data-processing systems.

11.3.2.1 The ATS provider shall ensure that Flight plan data submitted in advance of flight shall be updated by time, level and route changes and other essential information as may be necessary.

11.3.3 Basic flight plan data necessary for air traffic control purposes shall be furnished to the first en-route control centre at least 30 minutes in advance of the flight, and to each successive centre at least 20 minutes before the aircraft enters that centre's area of jurisdiction, in order for it to prepare for the transfer of control.

11.3.4 Except as provided for in 11.3.5, the second en-route centre and each successive centre shall be provided with current data, including updated basic flight plan data, contained in a current flight plan message or in an estimate message supplementing already available updated basic flight plan data.

11.3.5 In areas where automated systems are utilized for the exchange of flight plan data and where these systems provide data for several ACCs, approach control units and/or aerodrome control towers, the appropriate messages shall not be addressed to each individual ATS unit, but only to these automated systems.

Note. — Further processing and distribution of the data to its associated ATS units is the internal task of the receiving system.

11.3.5.1 The ATS provider shall ensure that when AIDC messages are used, the sending unit shall determine the identity of the receiving ATS unit and all messages shall contain the identification of the next ATS unit. The receiving unit shall accept only messages intended for it.

11.3.6 Movement messages

The ATS provider shall ensure that movement messages shall be addressed simultaneously to the first en-route control centre, to all other ATS units along the route of flight which are unable to obtain or process current flight plan data, and to air traffic flow management units concerned.

11.3.7 Coordination and transfer data

11.3.7.1 The ATS provider shall ensure that progression of a flight between successive control sectors and/or control centres shall be effected by acoordination and transfer dialogue 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 unit.

11.3.7.2 The ATS provider shall ensure that except as provided for in 11.3.7.3, the notification of the flight shall be by a current flight plan message containing all relevant ATS data or by an estimate message containing the proposed conditions of transfer. An estimate message shall be used only when updated basic flight plan data is already available at the receiving unit, i.e. a filed flight plan message and associated update message(s) have already been sent by the transferring unit.

11.3.7.3 The ATS provider shall ensure that Where AIDC messages are used, the notification of the flight shall be via a Notification message and/or Coordination Initial message containing all relevant ATS data.

11.3.7.4 Except as provided for in 11.3.7.5, the coordination dialogue shall be considered to be completed as soon as the proposed conditions contained in the current flight plan message, or in the estimate message or in one or more counterproposals, are accepted by an operational or logical procedure.

11.3.7.5 Where AIDC messages are used, any coordination dialogue shall be considered to be completed as soon as the Coordinate Initial message or a counterproposal (Coordinate Negotiate message) has been accepted.

11.3.7.6 The ATS provider shall ensure that Except as provided for in 11.3.7.7, unless an operational acknowledgement is received, a Logical Acknowledgement message shall be automatically transmitted by the receiving computer in order to ensure the integrity of the coordination dialogue employing computer-to-computer links. This message shall be transmitted when the transfer data has been received and processed to the point that it is considered free of syntactic and semantic errors, i.e. the message contains valid information.

11.3.7.7 The ATS provider shall ensure that where AIDC messages are used, an Application Accept message shall be automatically transmitted by the receiving computer in order to ensure the integrity of the coordination dialogue employing computer-to-computer links. This message shall be transmitted when the coordination, general information or transfer data has been received, processed and found free of errors and, where relevant, is available for presentation at the control position.

11.3.7.8 The ATS provider shall ensure that the transfer of control shall be either explicit or, by agreement between the two units concerned, implicit, i.e. no communication need be exchanged between the transferring and accepting units.

11.3.7.9 The ATS provider shall ensure that when the transfer of control involves exchange of data, the proposal for transfer shall include information derived from an ATS surveillance system, if appropriate. Since the proposal relates to previously accepted coordination data, further coordination shall normally not be required. However, acceptance of the proposed transfer conditions shall be required.

11.3.7.10 The ATS provider shall ensure that in situations where the proposed transfer conditions are no longer acceptable to the accepting unit, further coordination shall be initiated by the accepting unit by proposing alternative acceptable conditions.

11.3.7.11 The ATS provider shall ensure that Transfer of Communication messages may be used as an alternative to Transfer of Control messages. If Transfer of Communication messages are used to instruct a flight to establish communications with the receiving unit and
the transfer of control will take place at the control area boundary, or such other time or place, specified in letters of agreement, Transfer of Control messages need not be used.

11.3.7.12 The ATS provider shall ensure that if, after receipt of information derived from an ATS surveillance system, the accepting centre is unable to identify the aircraft immediately, additional communication shall ensue to obtain new surveillance information, if appropriate.

11.3.7.13 The ATS provider shall ensure that when control of the transferred aircraft has been assumed, the accepting unit shall complete the transfer of control dialogue by communicating assumption of control to the transferring unit, unless special arrangements have been made between the units concerned.

11.3.8 Supplementary data

11.3.8.1 When basic flight plan data or supplementary flight plan data are required, request messages shall be addressed to the ATS unit which is most likely to have access to the required data.

11.4 Message types and their Application

11.4.1 Emergency messages

11.4.1.1 Alerting (ALR) Messages

11.4.1.1.1 The ATS provider shall ensure that when an ATS unit considers that an aircraft is in a state of emergency as defined in Annex 11, Chapter 5, an alerting message shall be transmitted to any ATS unit that may be concerned with the flight and to the associated rescue coordination centres,

11.4.1.2 Radiocommunication Failure (RCF) Messages

Note. — Provisions governing the action to be taken in the event of radiocommunication failure are set forth in Annex 2, 3.6.5.2, and in Chapter 15, Section 15.6 of this document.

11.4.1.2.1 When an ATS unit is aware that an aircraft in its area is experiencing radiocommunication failure, an RCF message shall be transmitted to all subsequent ATS units along the route of flight which have already received basic flight plan data (FPL or RPL) and to the aerodrome control tower at the destination aerodrome, if basic flight plan data has been previously sent.

11.4.2 Movement and control messages

11.4.2.1 General

Messages concerning the intended or actual movement of aircraft shall be based on the latest information furnished to ATS units by the pilot, the operator or its designated representative, or derived from an ATS surveillance system.

11.4.2.2 Movement Messages

11.4.2.2.1 Movement messages comprise:

— filed flight plan messages (11.4.2.2.2)

— delay messages (11.4.2.2.3)

— modification messages (11.4.2.2.4)

— flight plan cancellation messages (11.4.2.2.5)

— departure messages (11.4.2.2.6)

— arrival messages (11.4.2.2.7).

11.4.2.2.2 *Filed Flight Plan (FPL) Messages*

Note. — Instructions for the transmission of an FPL message are contained in Appendix 6.

11.4.2.2.2.1 The ATS provider shall ensure that unless repetitive flight plan procedures are being applied or current flight plan messages are being employed, filed flight plan (FPL) messages shall be transmitted for all flights for which a flight plan has been submitted with the object of being provided with air traffic control service, flight information service or alerting service along part or the whole of the route of flight.

11.4.2.2.2.2 The ATS provider shall ensure that a FPL message shall be originated and addressed to the units identified in 11.4.2.2.2.3 by the ATS unit serving the departure aerodrome or, when applicable, by:

a) a unit designated by the appropriate ATS authority to serve the departure aerodrome;

b) the ATS unit receiving a flight plan from an aircraft in flight; or

c) the pilot, the operator or its designated representative, when so delegated in accordance with 11.2.1.1.1

11.4.2.2.2.3 The ATS provider shall ensure that An FPL message is addressed as follows:

a) an FPL message shall be sent to the ACC or flight information centre serving the control area or FIR within which the departure aerodrome is situated;

b) unless basic flight plan data are already available as a result of arrangements made for repetitive flight plans, an FPL message shall be sent to all centres in charge of each FIR or upper FIR along the route which are unable to process current data. In addition, an FPL message shall be sent to the aerodrome control tower at the destination aerodrome. If so required, an FPL message shall also be sent to flow management centres responsible for ATS units along the route;

c) when a potential re-clearance in flight (RIF) request is indicated in the flight plan, the FPL message shall be sent to the additional centres concerned and to the aerodrome control tower of the revised destination aerodrome;

d) where it has been agreed to use CPL messages but where information is required for early planning of traffic flow, an FPL message shall be transmitted to the ACCs concerned; and

e) for a flight along routes where flight information service and alerting service only are provided, an FPL message shall be addressed to the centre in charge of each FIR or upper FIR along the route and to the aerodrome control tower at the destination aerodrome

11.4.2.2.2.4 The ATS provider shall ensure that arrangement/agreement between the appropriate ATS authorities is in place to assist in the identification of flights and thereby eliminate or reduce the need for interceptions in the event of deviations from assigned track, FPL messages for flights along specified routes or portions of routes in close proximity to FIR boundaries shall also be addressed to the centres in charge of each FIR or upper FIR adjacent to such routes or portions of routes.

11.4.2.2.2.5 FPL messages may be transmitted immediately after the filing of the flight plan. If a flight plan is filed more than 24 hours in advance of the estimated off-block time of the flight to which it refers, the date of the flight departure shall be inserted in Item 18 of the flight plan.

11.4.2.2.3 *Delay (DLA) Messages*

11.4.2.2.3.1 The ATS provider shall ensure that a DLA message shall be transmitted when the departure of an aircraft, for which basic flight plan data (FPL or RPL) has been sent, is delayed by more than 30 minutes after the estimated off-block time contained in the basic flight plan data.

11.4.2.2.3.2 The DLA message shall be transmitted to all recipients of basic flight plan data.

Note.— See 11.4.2.3.4 concerning notification of a delayed departure of an aircraft for which a CPL message has been transmitted.

11.4.2.2.4 ***Modification (CHG) Messages***

11.4.2.2.4.1 The ATS provider shall ensure that a CHG message shall be transmitted when any change is to be made to basic flight plan data contained in previously transmitted FPL or RPL data. The CHG message shall be sent to those recipients of basic flight plan data which are affected by the change.

11.4.2.2.5 ***Flight Plan Cancellation (CNL) Messages***

11.4.2.2.5.1 The ATS provider shall ensure that a flight plan cancellation (CNL) message shall be transmitted when a flight, for which basic flight plan data has been previously distributed, has been cancelled. The ATS unit shall transmit the CNL message to ATS units which have received basic flight plan data.

11.4.2.2.6 ***Departure (DEP) Messages***

11.4.2.2.6.1 The ATS provider shall ensure that unless otherwise prescribed on the basis of regional air navigation agreements, a DEP message shall be transmitted immediately after the departure of an aircraft for which basic flight plan data have been previously distributed.

11.4.2.2.6.2 The DEP message shall be transmitted to all recipients of basic flight plan data.

11.4.2.2.7 ***Arrival (ARR) Messages***

11.4.2.2.7.1The ATS provider shall ensure that when an arrival report is received by the ATS unit, this unit shall transmit an ARR message:

a) for a landing at the destination aerodrome:

1) to the ACC or flight information centre in whose area the arrival aerodrome is located, if required by that unit; and

2) to the ATS unit, at the departure aerodrome, which originated the flight plan message, if that message included a request for an ARR message;

b) for a landing at an alternate or other aerodrome:

1) to the ACC or flight information centre in whose area the arrival aerodrome is located; and

2) to the aerodrome control tower at the destination aerodrome; and

3) to the air traffic services reporting office at the departure aerodrome; and

4) to the ACC or flight information centre in charge of each FIR or upper FIR through which the aircraft would have passed according to the flight plan, had it not diverted.

11.4.2.2.7.2 When a controlled flight which has experienced failure of two-way communication has landed, the aerodrome control tower at the arrival aerodrome shall transmit an ARR message:

a) for a landing at the destination aerodrome:

1) to all ATS units concerned with the flight during the period of the communication failure; and

2) to all other ATS units which may have been alerted;

b) for a landing at an aerodrome other than the destination aerodrome:

to the ATS unit serving the destination aerodrome; this unit shall then transmit an ARR message to other ATS units concerned or alerted as in a) above.

11.4.2.3 Control Messages

11.4.2.3.1 Control messages comprise:

— clearance messages (11.4.2.3.2)

— flow control messages (11.4.2.3.3)

— position-report and air-report messages (11.4.2.3.4).

11.4.2.3.2 *Clearance Messages*

11.4.2.3.2.1 The ATS provider shall ensure that 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.

11.4.2.3.2.2 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.

11.4.2.3.3 *Flow Control Messages*

Note 1.— Provisions governing the control of air traffic flow are set forth in Annex 11, 3.7.5 and in Chapter 3, 3.2.5.2 of this document. Attention is drawn, however, to the guidance material contained in the Manual on Collaborative Air Traffic Flow Management (ATFM) (Doc 9971).

11.4.2.3.4 *Position-Report and Air-Report Messages*

11.4.2.3.4.1 The format and data conventions to be used in position-report and special air-report messages are those specified on the model AIREP SPECIAL form at Appendix 5, using:

a) for position-report messages: Section 1;

b) for special air-report messages: Section 1 followed by Sections 2 and/or 3 as relevant.

11.4.3 Flight information messages

11.4.3.1 *Messages Containing Essential Local Traffic Information*

11.4.3.1.1The ATS provider shall ensure that whenever such messages are transmitted they shall contain the following text:

a) identification of the aircraft to which the information is transmitted;

b) the words TRAFFIC IS or ADDITIONAL TRAFFIC IS, if necessary;

c) description of the essential local traffic in terms that will facilitate recognition of it by the pilot, e.g. type, speed category and/or colour of aircraft, type of vehicle, number of persons;

d) position of the essential local traffic relative to the aircraft concerned, and direction of movement

11.4.3.2 Messages Containing Meteorological Information

Note. — Provisions governing the making and reporting of aircraft observations are contained in Annex 3. Provisions concerning the contents and transmission of air-reports are contained in Chapter 4, Section 4.12 of this document, and the special air-report of volcanic activity form used for reports of volcanic activity is shown in Appendix 5 to this document. The transmission by ATS units, to meteorological offices, of meteorological information received from aircraft in flight is governed by provisions in Chapter 4, Section 4.12.6 of this document. Provisions governing the transmission by ATS units of meteorological information to aircraft are set forth in Annex 11, 4.2 and in this document (see Chapter 4, 4.8.3 and 4.10.4; Chapter 6, Sections 6.4 and 6.6; Chapter 7, 7.4.1; and Chapter 9, 9.1.3). The written forms of SIGMET and AIRMET messages and other plain-language meteorological messages are governed by the provisions of Annex 3.

11.4.3.2.1 The ATS provider shall ensure that information to a pilot changing from IFR flight to VFR flight where it is likely that flight in VMC cannot be maintained shall be given in the following manner:

"INSTRUMENT METEOROLOGICAL CONDITIONS REPORTED (or forecast) IN THE VICINITY OF (location)".

11.4.3.2.2 The ATS provider shall ensure that Meteorological information concerning the meteorological conditions at aerodromes, to be transmitted to aircraft by the ATS unit concerned, shall be extracted by the ATS unit concerned from the following meteorological messages, provided by the Aeronautical meteorological office, supplemented for arriving and departing aircraft, as appropriate, by information from displays relating to meteorological sensors (in particular, those related to the surface wind and runway visual range) located in the ATS units:

a) local meteorological routine and special reports;

b) METAR/SPECI, for dissemination to other aerodromes beyond the aerodrome of origin (mainly intended for flight planning, VOLMET broadcasts and D-VOLMET).

11.4.3.2.3 The meteorological information referred to in 11.4.3.2.2 shall be extracted, as appropriate, from meteorological reports providing information on the following elements:

a) mean surface wind direction and speed and significant variations therefrom;

Note. — Information on surface wind direction provided to ATS units by the associated meteorological office is referenced to degrees true North. Information on surface wind direction obtained from the ATS surface wind indicator and passed to pilots by ATS units is given in degrees magnetic.

b) visibility, including significant directional variations;

c) runway visual range (RVR);

d) present weather;

e) amount and height of base of low cloud;

f) air temperature and dew-point temperature;

g) altimeter setting(s); and

h) supplementary information.

11.4.3.3 Messages Concerning the Operation of Aeronautical Facilities

11.4.3.3.1 Messages concerning the operation of aeronautical facilities shall be transmitted to aircraft from whose flight plan it is apparent that the operation of the flight may be affected by the operating status of the operating facility concerned. They shall contain appropriate data on the service status of the facility in question, and, if the facility is out of operation, an indication when the normal operating status will be restored.

11.4.3.4 Messages Containing Information on Aerodrome Conditions

Note. — Provisions regarding the issuance of information on aerodrome conditions are contained in Chapter 7, 7.5.

11.4.3.4.1 The ATS provider shall ensure that information on aerodrome conditions and associated facilities is provided in a clear and concise manner so as to facilitate appreciation by the pilot of the situation described.

11.4.3.4.2 The ATS provider shall make arrangement with the Aerodrome operator to ensure that information concerning runway surface conditions is provided to Aerodrome control tower in Globol Reporting Format (GRF)

Chapter 12: PHRASEOLOGIES

12.1 Communications Procedures

12.1.1 The communications procedures shall be in accordance with Volume II of RCATS — *Aeronautical Telecommunications*, and pilots, ATS personnel and other ground personnel shall be thoroughly familiar with the radiotelephony procedures contained therein.

12.2.1 Most phraseologies contained in Section 12.3 of this Chapter show the text of a complete message without call signs. They are not intended to be exhaustive, and when circumstances differ, pilots, ATS personnel and other ground personnel will be expected to use plain language, which should be as clear and concise as possible, to the level specified in the ICAO language proficiency requirements contained in Annex 1 — *Personnel Licensing*, in order to avoid possible confusion by those persons using a language other than one of their national languages.

12.2.2 The phraseologies are grouped according to types of air traffic service for convenience of reference. However, users shall be familiar with, and use as necessary, phraseologies from groups other than those referring specifically to the type of air traffic service being provided

12.2.3 Phraseologies for the movement of vehicles on the manoeuvring area shall be the same as those used for the movement of aircraft, with the exception of taxi instructions, in which case the word “PROCEED” shall be substituted for the word “TAXI” when communicating with vehicles.

12.2.4 The ATS provider shall ensure that Conditional phrases, such as “behind landing aircraft” or “after 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 and pilot. The aircraft or vehicle causing the condition in the clearance issued shall be the first aircraft/vehicle to pass in front of the other aircraft concerned. 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

d) brief reiteration of the condition,.

for example: “SAS 941, BEHIND DC9 ON SHORT FINAL, LINE UP BEHIND”.

12.2.5 Examples of the application of the phraseologies may be found in the *Manual of Radiotelephony* (Doc 9432)

Circumstances		*Phraseologies*
12.3.1.1	DESCRIPTION OF LEVELS (SUBSEQUENTLY REFERRED TO AS "(*LEVEL*)")	a) FLIGHT LEVEL *(number)*; *or* b) *(number)* METRES; *or* c) *(number)* FEET.
12.3.1.2	LEVEL CHANGES, REPORTS AND RATES	a) CLIMB (*or* DESCEND); *followed as necessary by:* 1) TO *(level)*;

Circumstances	*Phraseologies*
... instruction that a climb (or descent) to a level within the vertical range defined is to commence	2) TO AND MAINTAIN BLOCK *(level)* TO *(level);*
	3) TO REACH *(level)* AT *(or BY) (time or significant point)*;
	4) REPORT LEAVING (*or* REACHING, *or* PASSING) *(level)*;
	5) AT *(number)* METRES PER SECOND (*or* FEET PER MINUTE) [OR GREATER (*or* OR LESS)];
... for SST aircraft only	6) REPORT STARTING ACCELERATION (*or* DECELERATION).
	b) MAINTAIN AT LEAST *(number)* METRES (*or* FEET) ABOVE (*or* BELOW) *(aircraft call sign);*
	c) REQUEST LEVEL (*or* FLIGHT LEVEL *or* ALTITUDE) CHANGE FROM *(name of unit)* [AT *(time or significant point)*];
	d) STOP CLIMB (*or* DESCENT) AT *(level)*;
	e) CONTINUE CLIMB (*or* DESCENT) TO *(level)*;
	f) EXPEDITE CLIMB (*or* DESCENT) [UNTIL PASSING *(level)*];
	g) WHEN READY CLIMB (*or* DESCEND) TO *(level)*;
	h) EXPECT CLIMB (*or* DESCENT) AT *(time or significant point)*;
	*i) REQUEST DESCENT AT *(time)*;
... to require action at a specific time or place	j) IMMEDIATELY;
	k) AFTER PASSING *(significant point)*;
	l) AT *(time or significant point)*;
... to require action when convenient	m) WHEN READY *(instruction)*;

Circumstances	*Phraseologies*
... to require an aircraft to climb or descend maintaining own separation and VMC	n) MAINTAIN OWN SEPARATION AND VMC [FROM *(level)*] [TO *(level)*];
	o) 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	p) IF UNABLE *(alternative instructions)* AND ADVISE;
... when a pilot is unable to comply with a clearance or instruction	*q) UNABLE;
... after a flight crew starts to deviate from any ATC clearance or instruction to comply with an ACAS resolution advisory (RA) (Pilot and controller interchange)	*r) TCAS RA;
	s) ROGER;
... after the response to an ACAS RA is completed and a return to the ATC clearance or instruction is initiated (Pilot and controller interchange)	*t) CLEAR OF CONFLICT, RETURNING TO *(assigned clearance)*;
	u) ROGER *(or alternative instructions)*;
... after the response to an ACAS RA is completed and the assigned ATC clearance or instruction has been resumed (Pilot and controller interchange)	*v) CLEAR OF CONFLICT *(assigned clearance)* RESUMED;
	w) 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 and controller interchange)	*x) UNABLE, TCAS RA;
	y) ROGER;

Circumstances	*Phraseologies*
... 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);*

Circumstances	*Phraseologies*
... 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. * Denotes pilot transmission.
2.3.1.3 MINIMUM FUEL	
... indication of minimum fuel	*a) MINIMUM FUEL; b) ROGER [NO DELAY EXPECTED or EXPECT (*delay information*)]. * Denotes pilot transmission.
2.3.1.4 TRANSFER OF CONTROL AND/OR FREQUENCY CHANGE	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)*; d) STAND BY FOR *(unit call sign) (frequency)*;
Note.— An aircraft may be	

Circumstances	*Phraseologies*
uested to "STAND BY" on a quency when it is intended that ATS unit will initiate mmunications soon and to IONITOR" a frequency when ormation is being broadcast reon.	*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. * Denotes pilot transmission.
3 KHZ CHANNEL SPACING *Note.— In this paragraph, the m "point" is used only in the ntext of naming the 8.33 kHz nnel spacing concept and does constitute any change to sting ICAO provisions or raseology regarding the use of term "decimal".*	
... to request confirmation of 8.33 kHz capability	a) CONFIRM EIGHT POINT THREE THREE;
... to indicate 8.33 kHz capability	*b) AFFIRM EIGHT POINT THREE THREE;
... to indicate lack of 8.33 kHz capability	*c) NEGATIVE EIGHT POINT THREE THREE;
... to request UHF capability	d) CONFIRM UHF;
... to indicate UHF capability	*e) AFFIRM UHF;
o indicate lack of UHF capability	*f) NEGATIVE UHF;
... to request status in respect of 8.33 kHz exemption	g) CONFIRM EIGHT POINT THREE THREE EXEMPTED;
... to indicate 8.33 kHz exempted status	*h) AFFIRM EIGHT POINT THREE THREE EXEMPTED;
... to indicate 8.33 kHz non-exempted status	*i) NEGATIVE EIGHT POINT THREE THREE EXEMPTED;

Circumstances	*Phraseologies*
... to indicate that a certain clearance is given because otherwise a non-equipped and/or non-exempted aircraft would enter airspace of mandatory carriage	j) DUE EIGHT POINT THREE THREE REQUIREMENT. * Denotes pilot transmission.
1.6 CHANGE OF CALL SIGN	
... 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)*].
1.7 TRAFFIC INFORMATION	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)* UNMANNED FREE BALLOON(S) WAS [*or* ESTIMATED] OVER *(place)* AT *(time)* REPORTED *(level(s))* [*or* LEVEL UNKNOWN] MOVING *(direction) (other pertinent information, if any)*. * Denotes pilot transmission.
1.8 METEOROLOGICAL CONDITIONS	a) [SURFACE] WIND *(number)* DEGREES *(speed) (units)*; b) WIND AT *(level) (number)* DEGREES *(number)* KILOMETRES PER HOUR (*or* 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)*;

Circumstances	*Phraseologies*
	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 end 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); *Note.— Details of the means to describe the amount and type of cloud are in Chapter 11, 11.4.3.2.3.* j) CAVOK; *Note.— CAVOK pronounced CAV-O-KAY.* k) TEMPERATURE [MINUS] *(number)* (*and/or* DEWPOINT [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.
12.3.1.9 POSITION REPORTING	a) NEXT REPORT AT *(significant point)*;

Circumstances	*Phraseologies*
... to omit position reports until a specified position	b) OMIT POSITION REPORTS [UNTIL *(specify)*];
	c) RESUME POSITION REPORTING.
12.3.1.10 ADDITIONAL REPORTS	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)*;
... to report at a specified place or distance	*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)*.
	* Denotes pilot transmission.

CIRCUMSTANCES	*Phraseologies*
12.3.1.11 AERODROME INFORMATION *Note 1.— See 11.4.3.4.3 for requirements for passing runway condition reports (RCRs) 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)*] *followed 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)* PER CENT *or* NOT REPORTED); 5) ESTIMATED SURFACE FRICTION (GOOD, *or* GOOD TO MEDIUM, *or* MEDIUM, *or* MEDIUM TO POOR, *or* POOR, *or* LESS 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) [*(location)*] RUNWAY SURFACE CONDITION RUNWAY *(number)* NOT CURRENT;

c) LANDING SURFACE *(condition)*;

d) CAUTION CONSTRUCTION WORK *(location)*;

e) CAUTION *(specify reasons)* RIGHT (*or* LEFT), (*or* BOTH SIDES) OF RUNWAY *[(number)]*;

f) CAUTION WORK IN PROGRESS (*or* OBSTRUCTION) *(position and any necessary advice)*;

g) BRAKING ACTION REPORTED BY *(aircraft type)* AT *(time)* GOOD (*or* GOOD TO MEDIUM, *or* MEDIUM, *or* MEDIUM TO POOR, *or* POOR);

h) TAXIWAY *(identification of taxiway)* WET [*or* STANDING WATER, *or* SNOW REMOVED *(length and width as applicable)*, *or* CHEMICALLY 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 *or* LOOSE SAND)];

i) TOWER OBSERVES *(weather information)*;

j) PILOT REPORTS *(weather information)*.

	Circumstances	*Phraseologies*
12.3.1.13	REDUCED VERTICAL SEPARATION MINIMUM (RVSM) OPERATIONS	
	... to ascertain RVSM approval status of an aircraft	a) CONFIRM RVSM APPROVED;
	... to report RVSM approved status	*b) AFFIRM RVSM;
	... to report RVSM non-approved status followed by supplementary information	*c) NEGATIVE RVSM *[(supplementary information, e.g. State aircraft)]*;
	Note.— See 12.2.4 and 12.2.5 for procedures relating to operations in RVSM airspace by aircraft with non-approved status.	
	... to deny ATC clearance into RVSM airspace	d) UNABLE ISSUE CLEARANCE INTO RVSM AIRSPACE, MAINTAIN [*or* DESCEND TO, *or* CLIMB TO] *(level)*;
	... to report when severe turbulence affects the capability of an aircraft to maintain height-keeping requirements for RVSM	*e) UNABLE RVSM DUE TURBULENCE;
	... to report that the equipment of an aircraft has degraded below minimum aviation system performance standards	*f) UNABLE RVSM DUE EQUIPMENT;
	...to request an aircraft to provide information as soon as RVSM-approved status has been regained or the pilot is ready to resume RVSM operations	g) REPORT WHEN ABLE TO RESUME RVSM;
	... to request confirmation that an aircraft has regained RVSM-approved status or a pilot is ready to resume RVSM operations	h) CONFIRM ABLE TO RESUME RVSM;
	... to report ability to resume RVSM operations after an equipment or weather-related contingency	*i) READY TO RESUME RVSM.
		* Denotes pilot transmission.

Circumstances	*Phraseologies*
12.3.1.14 GNSS SERVICE STATUS	a) GNSS REPORTED UNRELIABLE (*or* GNSS MAY NOT BE AVAILABLE [DUE TO INTERFERENCE]); 1) IN THE VICINITY OF *(location) (radius)* [BETWEEN *(levels)*]; or 2) IN THE AREA OF *(description)* (*or* IN *(name)* FIR) [BETWEEN *(levels)*]; b) BASIC GNSS (*or* SBAS, *or* GBAS) UNAVAILABLE FOR *(specify operation)* [FROM *(time)* TO *(time)* (*or* UNTIL FURTHER NOTICE)]; *c) BASIC GNSS UNAVAILABLE [DUE TO (*reason, e.g.* LOSS OF RAIM *or* RAIM ALERT)]; *d) GBAS (*or* SBAS) UNAVAILABLE; e) CONFIRM GNSS NAVIGATION; and *f) AFFIRM GNSS NAVIGATION. * Denotes pilot transmission.
12.3.1.15 DEGRADATION OF AIRCRAFT NAVIGATION PERFORMANCE	UNABLE RNP *(specify type)* (*or* RNAV) [DUE TO (*reason, e.g.* LOSS OF RAIM *or* RAIM ALERT)].

12.3.2 Area control services

Circumstances	*Phraseologies*
12.3.2.1 ISSUANCE OF A CLEARANCE	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)*].

Circumstances	*Phraseologies*
12.3.2.2 INDICATION OF ROUTE AND CLEARANCE LIMIT	a) FROM *(location)* TO *(location)*; b) TO *(location)*, *followed as necessary by:* 1) DIRECT; 2) VIA *(route and/or significant points)*; 3) FLIGHT PLANNED ROUTE; *Note.— Conditions associated with the use of this phrase are in Chapter 4, 4.5.7.2.* 4) VIA *(distance)* DME ARC *(direction)* OF *(name of DME station)*; c) *(route)* NOT AVAILABLE DUE *(reason)* ALTERNATIVE[S] IS/ARE *(routes)* ADVISE.
12.3.2.3 MAINTENANCE OF SPECIFIED LEVELS	a) MAINTAIN *(level)* [TO *(significant point)*]; b) MAINTAIN *(level)* UNTIL PASSING *(significant point)*; c) MAINTAIN *(level)* UNTIL *(minutes)* AFTER 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.*
12.3.2.4 SPECIFICATION OF CRUISING LEVELS	a) CROSS *(significant point)* AT (*or* ABOVE, *or* BELOW) *(level)*; b) CROSS *(significant point)* AT *(time)* OR LATER (*or* BEFORE) AT *(level)*; c) CRUISE CLIMB BETWEEN *(levels)* (*or* ABOVE *(level)*); d) CROSS *(distance)* MILES, (GNSS *or* DME) *[(direction)]* OF *(name of DME station)* OR *(distance)* *[(direction)]* OF *(significant point)* AT (*or* ABOVE *or* BELOW) *(level)*.

Circumstances	*Phraseologies*
12.3.2.5 EMERGENCY DESCENT	*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.). * Denotes pilot transmission.
12.3.2.6 IF CLEARANCE CANNOT BE ISSUED IMMEDIATELY UPON REQUEST	EXPECT CLEARANCE *(or type of clearance)* AT *(time)*.
12.3.2.7 WHEN CLEARANCE FOR DEVIATION CANNOT BE ISSUED	UNABLE, TRAFFIC *(direction)* BOUND *(type of aircraft) (level)* ESTIMATED (*or* OVER) *(significant point)* AT *(time)* CALL SIGN *(call sign)* ADVISE INTENTIONS.
12.3.2.8 SEPARATION INSTRUCTIONS *Note.— When used to apply a lateral VOR/GNSS separation confirmation of zero offset is required (see 5.4.1.2).*	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)*. e) CONFIRM ESTABLISHED ON THE TRACK BETWEEN *(significant point)* AND *(significant point)* [WITH ZERO OFFSET]; *f) ESTABLISHED ON THE TRACK BETWEEN *(significant point)* AND *(significant point)* [WITH ZERO OFFSET]; g) MAINTAIN TRACK BETWEEN *(significant point)* AND *(significant point)*. REPORT ESTABLISHED ON THE TRACK; *h) ESTABLISHED ON THE TRACK; i) CONFIRM ZERO OFFSET; *j) AFFIRM ZERO OFFSET. * Denotes pilot transmission.
12.3.2.9 INSTRUCTIONS ASSOCIATED WITH FLYING A TRACK (OFFSET), PARALLEL TO THE CLEARED ROUTE	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)*.

12.3.3 Approach control services

Circumstances	*Phraseologies*
12.3.3.1 DEPARTURE INSTRUCTIONS	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 *(designation)* DEPARTURE; *Note.— Conditions associated with the use of this phrase are in Chapter 4, 4.5.7.2.*
…clearance to proceed direct with advance notice of a future instruction to rejoin the SID	g) CLEARED DIRECT *(waypoint)*, CLIMB TO *(level)*, EXPECT TO REJOIN SID [*(SID designator)*] [AT *(waypoint)*], *then* REJOIN SID [*(SID designator)*] [AT *(waypoint)*]; h) CLEARED DIRECT *(waypoint)*,CLIMB TO *(level)*, *then* REJOIN SID *(SID designator)* AT *(waypoint)*.
12.3.3.2 APPROACH INSTRUCTIONS	a) CLEARED *(designation)* ARRIVAL; b) CLEARED TO *(clearance limit) (designation)*; c) CLEARED (*or* PROCEED) *(details of route to be followed)*;

Circumstances	*Phraseologies*
…clearance to proceed direct with advance notice of a future instruction to rejoin the STAR	d) CLEARED DIRECT *(waypoint)*, DESCEND TO *(level)*, EXPECT TO 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)*;
	f) CLEARED *(type of approach)* APPROACH [RUNWAY *(number)*];
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.	g) CLEARED *(type of approach)* RUNWAY *(number)* FOLLOWED BY CIRCLING TO RUNWAY *(number)*;
	h) CLEARED APPROACH [RUNWAY *(number)*];
	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;
	m) REPORT RUNWAY [LIGHTS] IN SIGHT;
… when a pilot requests a visual approach	*n) REQUEST VISUAL APPROACH;
	o) CLEARED VISUAL APPROACH RUNWAY *(number)*;

Circumstances	*Phraseologies*
… to request if a pilot is able to accept a visual approach *Note.—See 6.5.3 for provisions relating to visual approach procedures.*	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]; 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)*]; * Denotes pilot transmission.
12.3.3.3 HOLDING CLEARANCES	
… 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 APPROACH CLEARANCE (*or* FURTHER CLEARANCE) AT *(time)*; *c) REQUEST HOLDING INSTRUCTIONS;

Circumstances	*Phraseologies*
... 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)*; f) CLEARED TO THE *(three digits)* RADIAL OF THE *(name)* VOR AT *(distance)* DME FIX [MAINTAIN (*or* CLIMB *or* DESCEND TO) *(level)*] HOLD BETWEEN *(distance)* AND *(distance)* DME [RIGHT (*or* LEFT) HAND PATTERN] EXPECT APPROACH CLEARANCE (*or* FURTHER CLEARANCE) AT *(time) (additional instructions, if necessary)*. * Denotes pilot transmission.
12.3.3.4 EXPECTED APPROACH TIME	a) NO DELAY EXPECTED; b) EXPECTED APPROACH TIME *(time)*; c) REVISED EXPECTED APPROACH TIME *(time)*; d) DELAY NOT DETERMINED *(reasons)*.

12.3.4 Phraseologies for use on and in the vicinity of the aerodrome

Circumstances	*Phraseologies*
12.3.4.1 IDENTIFICATION OF AIRCRAFT	SHOW LANDING LIGHTS.
12.3.4.2 ACKNOWLEDGEMENT BY VISUAL MEANS	a) ACKNOWLEDGE BY MOVING AILERONS (*or* RUDDER); b) ACKNOWLEDGE BY ROCKING WINGS; c) ACKNOWLEDGE BY FLASHING LANDING LIGHTS.
12.3.4.3 STARTING PROCEDURES	
... 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) EXPECT START UP AT *(time)*; f) START UP AT OWN DISCRETION; g) EXPECT DEPARTURE *(time)* START UP AT OWN DISCRETION. * Denotes pilot transmission.
12.3.4.4 PUSHBACK PROCEDURES *Note.— When local procedures so prescribe, authorization 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)*. * Denotes pilot transmission.

Circumstances	*Phraseologies*
12.3.4.5 TOWING PROCEDURES	†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.
	† Denotes transmission from aircraft/tow vehicle combination.
12.3.4.6 TO REQUEST TIME CHECK AND/OR AERODROME DATA FOR DEPARTURE	*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.
	* Denotes pilot transmission.
12.3.4.7 TAXI PROCEDURES	
... for departure	*a) *[aircraft type] [wake turbulence category if "super" or "heavy"] [aircraft location]* REQUEST TAXI *[intentions]*;
	*b) *[aircraft type] [wake turbulence category if "super" or "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 "super" or "heavy"]* REQUEST DETAILED TAXI INSTRUCTIONS;

Circumstances	*Phraseologies*
	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.)*];
	m) 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	*n) REQUEST BACKTRACK;
	o) BACKTRACK APPROVED;
	p) BACKTRACK RUNWAY *(number)*;
... general	*q) [*(aircraft location)*] REQUEST TAXI TO *(destination on aerodrome)*;
	r) TAXI STRAIGHT AHEAD;
	s) TAXI WITH CAUTION;
	t) GIVE WAY TO *(description and position of other aircraft)*;
	*u) GIVING WAY TO *(traffic)*;
	*v) TRAFFIC *(or type of aircraft)* IN SIGHT;
	w) TAXI INTO HOLDING BAY;
	x) FOLLOW *(description of other aircraft or vehicle)*;

Circumstances	*Phraseologies*
	y) VACATE RUNWAY; *z) RUNWAY VACATED; aa) EXPEDITE TAXI *[(reason)]*; *bb) EXPEDITING; cc) [CAUTION] TAXI SLOWER *[reason]*; *dd) SLOWING DOWN. * Denotes pilot transmission.
12.3.4.8 HOLDING ... to hold not closer to a runway than specified in Chapter 7, 7.6.3.1.3.1	‡a) HOLD *(direction)* OF *(position, runway number, etc.)*; ‡b) HOLD POSITION; ‡c) HOLD *(distance)* FROM *(position)*; ‡d) HOLD SHORT OF *(position)*; *e) HOLDING; *f) HOLDING SHORT. ‡ Requires specific acknowledgement from the pilot. * Denotes pilot transmission. The procedure words ROGER and WILCO are insufficient acknowledgement of the instructions HOLD, HOLD POSITION and HOLD SHORT OF (position). In each case the acknowledgement shall be by the phraseology HOLDING or HOLDING SHORT, as appropriate.
12.3.4.9 TO CROSS A RUNWAY	*a) REQUEST CROSS RUNWAY *(number)*; *Note.— If the control tower is unable to see the crossing aircraft (e.g. night, low visibility), the instruction should always be accompanied by a request to report when the aircraft has vacated the runway.* b) CROSS RUNWAY *(number)* [REPORT VACATED]; c) EXPEDITE CROSSING RUNWAY *(number)* TRAFFIC *(aircraft type)* *(distance)* KILOMETRES (*or* 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)*];

Circumstances	*Phraseologies*
Note.— The pilot will, when requested, report "RUNWAY VACATED" when the entire aircraft is beyond the relevant runway-holding position.	*e) RUNWAY VACATED. * Denotes pilot transmission.
12.3.4.10 PREPARATION FOR TAKE-OFF	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;
... clearance to enter runway and await take-off clearance	f) LINE UP [AND WAIT]; †g) LINE UP RUNWAY *(number)*; h) LINE UP. BE READY FOR IMMEDIATE DEPARTURE;
... conditional clearances	‡i) *(condition)* LINE UP *(brief reiteration of the condition)*;
... acknowledgement of a conditional clearance	*j) *(condition)* LINING UP *(brief reiteration of the condition)*;
... confirmation or otherwise of the readback of conditional clearance	k) [THAT IS] CORRECT (*or* NEGATIVE) [I SAY AGAIN] ... *(as appropriate)*. * Denotes pilot transmission. † When there is the possibility of confusion during multiple runway operations. ‡ Provisions concerning the use of conditional clearances are contained in 12.2.7.
12.3.4.11 TAKE-OFF CLEARANCE	a) RUNWAY *(number)* CLEARED FOR TAKE-OFF [REPORT AIRBORNE];
... when reduced runway separation is used	b) *(traffic information)* RUNWAY *(number)* CLEARED FOR TAKE-OFF;

Circumstances	*Phraseologies*
... 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 fly past 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. * Denotes pilot transmission.
12.3.4.17 DELAYING AIRCRAFT	a) CIRCLE THE AERODROME; b) ORBIT (RIGHT, *or* LEFT) [FROM PRESENT POSITION]; c) MAKE ANOTHER CIRCUIT.
12.3.4.18 MISSED APPROACH	a) GO AROUND; *b) GOING AROUND. * Denotes pilot transmission.
12.3.4.19 INFORMATION TO AIRCRAFT	
... 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);

Circumstances	*Phraseologies*
... wake turbulence	e) CAUTION WAKE TURBULENCE [FROM ARRIVING (*or* DEPARTING) *(type of aircraft)*] *[additional information as required]*;
... jet blast on apron or taxiway	f) CAUTION JET BLAST;
... propeller-driven aircraft slipstream	g) CAUTION SLIPSTREAM.
12.3.4.20 RUNWAY VACATING AND COMMUNICATIONS AFTER LANDING	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, taxiing light aircraft, personnel, etc.)*];
	h) 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)*.

12.3.5 Coordination between ATS units

Circumstances	*Phraseologies*
12.3.5.1 ESTIMATES AND REVISIONS	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;

Circumstances	*Phraseologies*
... 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)*.
12.3.5.2 TRANSFER OF CONTROL	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)*].
12.3.5.3 CHANGE OF CLEARANCE	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)*.
12.3.5.4 APPROVAL REQUEST	a) APPROVAL REQUEST *(aircraft call sign)* ESTIMATED DEPARTURE FROM *(significant point)* AT *(time)*; b) *(aircraft call sign)* REQUEST APPROVED *[(restriction if any)]*; c) *(aircraft call sign)* UNABLE *(alternative instructions)*.

Circumstances	*Phraseologies*
12.3.5.5 INBOUND RELEASE	[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)*.
12.3.5.6 HANDOVER	HANDOVER *(aircraft call sign)* [SQUAWKING *(SSR code)*] POSITION *(aircraft position) (level)*.
12.3.5.7 EXPEDITION OF CLEARANCE	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.)*.
12.3.5.8 REDUCED VERTICAL SEPARATION MINIMUM (RVSM) OPERATIONS	
... to verbally supplement estimate messages of aircraft non-approved for RVSM or to verbally supplement an automated estimate message exchange that does not automatically transfer information from Item 18 of the flight plan followed by supplementary information, as appropriate	a) NEGATIVE RVSM *[(supplementary information, e.g. State aircraft)]*;
... to communicate the cause of a contingency relating to an aircraft that is unable to conduct RVSM operations due to severe turbulence or other severe meteorological phenomena or equipment failure, as applicable	b) UNABLE RVSM DUE TURBULENCE (*or* EQUIPMENT, *as applicable*).

12.3.6 Phraseologies to be used related to CPDLC

Circumstances	*Phraseologies*
12.3.6.1 OPERATIONAL STATUS	
... 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)*;

Circumstances	*Phraseologies*
... 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.

Service Phraseologies

Note.— The following comprise phraseologies specifically applicable when an ATS surveillance system is used in the provision of air traffic services. The phraseologies detailed in the sections above for use in the provision of air traffic services are also applicable, as appropriate, when an ATS surveillance system is used.

12.4.1 General ATS surveillance service phraseologies

Circumstances	*Phraseologies*
12.4.1.1 IDENTIFICATION OF AIRCRAFT	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].
12.4.1.2 POSITION INFORMATION	POSITION *(distance) (direction)* OF *(significant point)* (*or* OVER *or* ABEAM *(significant point)*).
12.4.1.3 VECTORING INSTRUCTIONS	a) LEAVE *(significant point)* HEADING *(three digits)*; b) CONTINUE HEADING *(three digits)*; c) CONTINUE PRESENT HEADING;

Circumstances	*Phraseologies*
	d) FLY HEADING *(three digits)*; e) TURN LEFT (*or* RIGHT) HEADING *(three digits) [reason]*; f) TURN LEFT (*or* RIGHT) *(number of degrees)* DEGREES *[reason]*; g) STOP TURN HEADING *(three digits)*; h) FLY HEADING *(three digits)*, WHEN ABLE PROCEED DIRECT *(name) (significant point)*; i) HEADING IS GOOD.
12.4.1.4 TERMINATION OF VECTORING	a) RESUME OWN NAVIGATION *(position of aircraft) (specific instructions)*; b) RESUME OWN NAVIGATION [DIRECT] *(significant point)* [MAGNETIC TRACK *(three digits)* DISTANCE *(number)* KILOMETRES (*or* MILES)].
12.4.1.5 MANOEUVRES ... (in case of unreliable directional instruments on board aircraft) *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).*	a) MAKE A THREE SIXTY TURN LEFT (*or* RIGHT) *[reason]*; b) ORBIT LEFT (*or* RIGHT) *[reason]*; 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; e) STOP TURN NOW.
12.4.1.6 SPEED CONTROL	a) REPORT SPEED; *b) SPEED *(number)* KILOMETRES PER HOUR (*or* KNOTS); c) MAINTAIN *(number)* KILOMETRES PER HOUR (*or* KNOTS) [OR GREATER (*or* OR LESS)] [UNTIL *(significant point)*]; d) DO NOT EXCEED *(number)* KILOMETRES PER HOUR (*or* KNOTS);

Circumstances	*Phraseologies*
	e) MAINTAIN PRESENT SPEED; f) INCREASE (*or* REDUCE) SPEED TO *(number)* KILOMETRES PER HOUR (*or* KNOTS) [OR GREATER (*or* OR LESS)]; g) INCREASE (*or* REDUCE) SPEED BY *(number)* KILOMETRES PER HOUR (*or* 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. * Denotes pilot transmission.
12.4.1.7 POSITION REPORTING	
... 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.
12.4.1.8 TRAFFIC INFORMATION AND AVOIDING ACTION	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)*;

Circumstances		*Phraseologies*
		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 *(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)*.
		* Denotes pilot transmission.
12.4.1.9	COMMUNICATIONS AND LOSS OF COMMUNICATIONS	a) [IF] RADIO CONTACT 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)]*.
12.4.1.10	TERMINATION OF RADAR AND/OR ADS-B SERVICE	a) RADAR SERVICE (*or* IDENTIFICATION) TERMINATED [DUE *(reason)*] *(instructions);*
		b) WILL SHORTLY LOSE IDENTIFICATION *(appropriate instructions or information)*;
		c) IDENTIFICATION LOST *[reasons] (instructions)*.
12.4.1.11	RADAR AND/OR ADS-B EQUIPMENT DEGRADATION	a) SECONDARY RADAR OUT OF SERVICE *(appropriate information as necessary)*;
		b) PRIMARY RADAR OUT OF SERVICE *(appropriate information as necessary)*;

Circumstances	*Phraseologies*
	c) ADS-B OUT OF SERVICE *(appropriate information as necessary)*.

12.4.2 Radar in approach control service

Circumstances	*Phraseologies*
12.4.2.1 VECTORING FOR APPROACH	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)*.
12.4.2.2 VECTORING FOR ILS AND OTHER APPROACH PROCEDURES	a) POSITION *(number)* KILOMETRES (*or* 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 (LOCALIZER *or* [GLS/RNP/MLS] FINAL APPROACH COURSE *or radio aid*) *(reason)*;

Circumstances	*Phraseologies*
	i) THIS TURN WILL TAKE YOU THROUGH THE (LOCALIZER *or* [GLS/RNP/MLS] FINAL APPROACH COURSE *or radio aid*) [*(reason)*]; j) TAKING YOU THROUGH THE (LOCALIZER *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 (LOCALIZER *or* [GLS/RNP/MLS] [FINAL] APPROACH [COURSE] *or radio aid*) [RUNWAY *(number)*] [REPORT ESTABLISHED]. * Denotes pilot transmission.
12.4.2.3 MANOEUVRE DURING INDEPENDENT AND DEPENDENT PARALLEL APPROACHES	a) CLEARED FOR *(type of approach)* APPROACH RUNWAY *(number)* LEFT (*or* RIGHT); b) YOU HAVE CROSSED THE LOCALIZER (*or* GLS/RNP/MLS FINAL APPROACH COURSE). TURN LEFT (*or* RIGHT) IMMEDIATELY AND RETURN TO THE LOCALIZER (*or* GLS/RNP/MLS FINAL APPROACH COURSE) [RUNWAY *(number)*]; c) ILS (*or* MLS) RUNWAY *(number)* LEFT (*or* RIGHT) LOCALIZER (*or* MLS) 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 120 m (400 ft) 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)*.
12.4.2.4 SURVEILLANCE RADAR APPROACH	
12.4.2.4.1 PROVISION OF SERVICE	a) THIS WILL BE A SURVEILLANCE RADAR APPROACH RUNWAY *(number)* TERMINATING AT *(distance)* FROM TOUCHDOWN, OBSTACLE CLEARANCE ALTITUDE (*or* HEIGHT) *(number)* METRES (*or* FEET) CHECK YOUR MINIMA [IN CASE OF GO AROUND *(instructions)*];

Circumstances	*Phraseologies*
	b) APPROACH INSTRUCTIONS WILL BE TERMINATED AT *(distance)* FROM TOUCHDOWN.
12.4.2.4.2 ELEVATION	a) COMMENCE DESCENT NOW [TO MAINTAIN A *(number)* DEGREE GLIDE PATH]; b) *(distance)* FROM TOUCHDOWN ALTITUDE (*or* HEIGHT) SHOULD BE *(numbers and units)*.
12.4.2.4.3 POSITION	*(distance)* FROM TOUCHDOWN.
12.4.2.4.4 CHECKS	a) CHECK GEAR DOWN [AND LOCKED]; b) OVER THRESHOLD.
12.4.2.4.5 COMPLETION OF APPROACH	a) REPORT VISUAL; b) REPORT RUNWAY [LIGHTS] IN SIGHT; c) APPROACH COMPLETED [CONTACT *(unit)*].
12.4.2.5 PAR APPROACH	
12.4.2.5.1 PROVISION OF SERVICE	a) THIS WILL BE A PRECISION RADAR APPROACH RUNWAY *(number)*; b) PRECISION APPROACH NOT AVAILABLE DUE *(reason)* *(alternative instructions)*; c) IN CASE OF GO AROUND *(instructions)*.
12.4.2.5.2 COMMUNICATIONS	a) DO NOT ACKNOWLEDGE FURTHER TRANSMISSIONS; b) REPLY NOT RECEIVED. WILL CONTINUE INSTRUCTIONS.
12.4.2.5.3 AZIMUTH	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)* METRES LEFT (*or* RIGHT) OF TRACK.
12.4.2.5.4 ELEVATION	a) APPROACHING GLIDE PATH;

Circumstances	*Phraseologies*
	b) COMMENCE DESCENT NOW [AT *(number)* METRES PER SECOND OR *(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)* METRES (*or* 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 TOUCHDOWN. ALTITUDE (*or* HEIGHT) SHOULD BE *(numbers and units)*.
12.4.2.5.5 POSITION	a) *(distance)* FROM TOUCHDOWN; b) OVER APPROACH LIGHTS; c) OVER THRESHOLD.
12.4.2.5.6 CHECKS	a) CHECK GEAR DOWN AND LOCKED; b) CHECK DECISION ALTITUDE (*or* HEIGHT).
12.4.2.5.7 COMPLETION OF APPROACH	a) REPORT VISUAL; b) REPORT RUNWAY [LIGHTS] IN SIGHT; c) APPROACH COMPLETED [CONTACT *(unit)*].

Circumstances	*Phraseologies*
12.4.2.5.8 MISSED APPROACH	a) CONTINUE VISUALLY OR GO AROUND *[missed approach instructions]*; b) GO AROUND IMMEDIATELY *[missed approach instructions] (reason)*; c) ARE YOU GOING AROUND?; d) IF GOING AROUND *(appropriate instructions)*; *e) GOING AROUND. * Denotes pilot transmission.

12.4.3 Secondary surveillance radar (SSR) and ADS-B phraseologies

Circumstances	*Phraseologies*
12.4.3.1 TO REQUEST THE CAPABILITY OF THE SSR EQUIPMENT	a) ADVISE TRANSPONDER CAPABILITY; *b) TRANSPONDER *(as shown in the flight plan)*; *c) NEGATIVE TRANSPONDER. * Denotes pilot transmission.
12.4.3.2 TO REQUEST THE CAPABILITY OF THE ADS-B EQUIPMENT	a) ADVISE ADS-B CAPABILITY; *b) ADS-B TRANSMITTER *(data link)*; *c) ADS-B RECEIVER *(data link)*; *d) NEGATIVE ADS-B. * Denotes pilot transmission.
12.4.3.3 TO INSTRUCT SETTING OF TRANSPONDER	a) FOR DEPARTURE SQUAWK *(code)*; b) SQUAWK *(code)*.
12.4.3.4 TO REQUEST THE PILOT TO RESELECT THE ASSIGNED MODE AND CODE	a) RESET SQUAWK *[(mode)] (code)*; *b) RESETTING *(mode) (code)*. * Denotes pilot transmission.

Circumstances	*Phraseologies*
12.4.3.5 TO REQUEST RESELECTION OF AIRCRAFT IDENTIFICATION	RE-ENTER [ADS-B *or* MODE S] AIRCRAFT IDENTIFICATION.
12.4.3.6 TO REQUEST THE PILOT TO CONFIRM THE CODE SELECTED ON THE AIRCRAFT'S TRANSPONDER	a) CONFIRM SQUAWK *(code)*; *b) SQUAWKING *(code)*. * Denotes pilot transmission.
12.4.3.7 TO REQUEST THE OPERATION OF THE IDENT FEATURE	a) SQUAWK *[(code)]* [AND] IDENT; b) SQUAWK LOW; c) SQUAWK NORMAL; d) TRANSMIT ADS-B IDENT.
12.4.3.8 TO REQUEST TEMPORARY SUSPENSION OF TRANSPONDER OPERATION	SQUAWK STANDBY.
12.4.3.9 TO REQUEST EMERGENCY CODE	SQUAWK MAYDAY [CODE SEVEN-SEVEN-ZERO-ZERO].
12.4.3.10 TO REQUEST TERMINATION OF TRANSPONDER AND/OR ADS-B TRANSMITTER OPERATION *Note.— Independent operations of Mode S transponder and ADS-B may not be possible in all aircraft (e.g. where ADS-B is solely provided by 1 090 MHz extended squitter emitted from the transponder). In such cases, aircraft may not be able to comply with ATC instructions related to ADS-B operation.*	a) STOP SQUAWK [TRANSMIT ADS-B ONLY]; b) STOP ADS-B TRANSMISSION [SQUAWK *(code)* ONLY].
12.4.3.11 TO REQUEST TRANSMISSION OF PRESSURE-ALTITUDE	a) SQUAWK CHARLIE; b) TRANSMIT ADS-B ALTITUDE.
12.4.3.12 TO REQUEST PRESSURE SETTING CHECK AND CONFIRMATION OF LEVEL	CHECK ALTIMETER SETTING AND CONFIRM *(level)*.
12.4.3.13 TO REQUEST TERMINATION OF PRESSURE-ALTITUDE TRANSMISSION BECAUSE OF FAULTY OPERATION *Note.— See Note to paragraph 12.4.3.10.*	a) STOP SQUAWK CHARLIE WRONG INDICATION; b) STOP ADS-B ALTITUDE TRANSMISSION [(WRONG INDICATION, *or reason*)].

Circumstances	*Phraseologies*
12.4.3.14 TO REQUEST LEVEL CHECK	CONFIRM *(level)*.

12.5 Automatic Dependent Sruveillance- Contract (ADS-C) Phraseologies

12.5.1 General ADS-C phraseologies

Circumstances	*Phraseologies*
12.5.1.1 ADS-C DEGRADATION	ADS-C (*or* ADS-CONTRACT) OUT OF SERVICE *(appropriate information as necessary)*.

12.6 Alarting Phraseologies

12.6.1 Alerting phraseologies

Circumstances	*Phraseologies*
12.6.1.1 LOW ALTITUDE WARNING	*(aircraft call sign)* LOW ALTITUDE WARNING, CHECK YOUR ALTITUDE IMMEDIATELY, QNH IS *(number) [(units)]*. [THE MINIMUM FLIGHT ALTITUDE IS *(altitude)*].
12.6.1.2 TERRAIN ALERT	*(aircraft call sign)* TERRAIN ALERT, *(suggested pilot action, if possible)*.

12.7 Ground crew/flight crew Phraseologies

12.7.1 Ground crew/flight crew phraseologies

Circumstances	*Phraseologies*
12.7.1.1 STARTING PROCEDURES (GROUND CREW/COCKPIT)	a) [ARE YOU] READY TO START UP?;

Circumstances	*Phraseologies*
	*b) STARTING NUMBER *(engine number(s))*. *Note 1.— The ground crew should follow this exchange by either a reply on the intercom or a distinct visual signal to indicate that all is clear and that the start-up as indicated may proceed.* *Note 2.— Unambiguous identification of the parties concerned is essential in any communications between ground crew and pilots.* * Denotes pilot transmission.
2.7.1.2 PUSHBACK PROCEDURES	
... (ground crew/cockpit)	a) ARE YOU READY FOR PUSHBACK?; *b) READY FOR PUSHBACK; c) CONFIRM BRAKES RELEASED; *d) BRAKES RELEASED; e) COMMENCING PUSHBACK; f) PUSHBACK COMPLETED; *g) STOP PUSHBACK; h) CONFIRM BRAKES SET; *i) BRAKES SET; *j) DISCONNECT; k) DISCONNECTING STAND BY FOR VISUAL AT YOUR LEFT (*or* RIGHT). *Note.— This exchange is followed by a visual signal to the pilot to indicate that disconnect is completed and all is clear for taxiing.* * Denotes pilot transmission.

12.7.2 De/anti-icing operations

	Circumstances	*Phraseologies*
12.7.2.1	PRIOR TO DE-ICING/ANTI-ICING (GROUND CREW (ICEMAN) / FLIGHT CREW)	a) STANDING BY TO DE-ICE. CONFIRM BRAKES SET AND TREATMENT REQUIRED;
		*b) [AFFIRM] BRAKES SET, REQUEST *(type of de/anti-icing treatment and areas to be treated)*;
	…aircraft configuration confirmation	c) HOLD POSITION AND CONFIRM AIRCRAFT CONFIGURED;
		*d) [AFFIRM] AIRCRAFT CONFIGURED, READY FOR DE-ICING;
		e) DE-ICING STARTS NOW.
		* Denotes pilot transmission.
12.7.2.2	UPON CONCLUDING DE-ICING/ANTI-ICING PROCEDURE	
	…for de-icing operation	a) DE-ICING ON *(areas treated)* COMPLETE. ADVISE WHEN READY FOR INFORMATION;
		b) TYPE OF FLUID (Type I *or* II *or* III *or* IV);
		c) HOLDOVER TIME STARTED AT *(time)*;
		d) ANTI-ICING CODE *(appropriate anti-icing code)*
		Note.— Anti-icing code example:
	…for a two-step de-icing/anti-icing operation	*A de-icing/anti-icing procedure whose last step is the use of a mixture of 75% of a Type II fluid and 25% water, commencing at 13:35 local time, is recorded as follows:*
		TYPE II/75 13:35 (followed by complete name of anti-icing fluid)
		e) FINAL STEP STARTED AT *(time)*;
	… De-icing/anti-icing complete	f) POST DE-ICING CHECK COMPLETED;
		g) PERSONNEL AND EQUIPMENT CLEAR OF AIRCRAFT;
12.7.2.3	ABNORMAL OPERATIONS	
	… for spray nozzle proximity sensor activation	a) BE ADVISED NOZZLE PROXIMITY ACTIVATION ON *(significant point on aircraft)* [NO VISUAL DAMAGE *or* DAMAGE *(description of damage)* OBSERVED] [SAY INTENTIONS];
	… for other aircraft having an emergency on the de-icing bay	b) EMERGENCY IN DE-ICING BAY *(de-icing bay number)* [SHUT DOWN ENGINES *or* STANDBY FOR FURTHER INSTRUCTIONS].

Chapter 13: PROCEDURES RELATED TO EMERGENCIES, COMMUNICATION FAILURE AND CONTINGENCIES

13.1 Emergency Procedures

13.1.1 General

13.1.1.1 The ATS provider shall ensure that Air traffic control units shall maintain full and complete coordination, and personnel shall use their best judgement in handling emergency situations.

Note 1.— Additional procedures to be applied in relation to emergencies and contingencies while using an ATS surveillance system are contained in Chapter 8, 8.8.1.

Note 2.— If the pilot of an aircraft encountering a state of emergency has previously been directed by ATC to select
a specific transponder code and/or a specific ADS-B emergency mode, that code and/or mode will normally be maintained unless, in special circumstances, the pilot has decided or has been advised otherwise. Where ATC has not
requested a code or emergency mode to be set, the pilot will set the transponder to Mode A Code 7700 and/or the appropriate ADS-B emergency mode.

Note 3.— Some aircraft equipped with first generation ADS-B avionics have the capability to transmit a general emergency alert only, regardless of the code selected by the pilot.

Note 4.— Some aircraft equipped with first generation ADS-B avionics do not have the capability of squawking IDENT while the emergency and/or urgency mode is selected.

13.1.2 Priority

13.1.2.1 The |ATS provider shall ensure that an aircraft known or believed to be in a state of emergency, including being subjected to unlawful interference, shall be given priority over other aircraft.

13.1.3 Unlawful interference and aircraft bomb threat

13.1.3.1 The ATS provider shall ensure that Air traffic services personnel shall be prepared to recognize any indication of the occurrence of unlawful interference with an aircraft.

13.1.3.2 The ATS provider shall ensure that 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 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 an 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. An aircraft equipped with other surveillance system transmitters, including ADS-B and ADS-C, might send the emergency and/or urgency signal by all of the available means.

13.1.3.3 The ATS provider shall ensure that whenever unlawful interference with an aircraft is known or suspected or a bomb threat warning has been received, ATS units 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 route of flight 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.

13.1.3.3.1 The ATS provider shall ensure that ATS units shall also:

a) transmit, and continue to transmit, information pertinent to the safe conduct of the flight, without expecting a reply from the aircraft;

b) monitor and plot the progress of the flight with the means available, and coordinate transfer of control with adjacent ATS units 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, 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 ATS unit with appropriate information as to the expected or possible penetration of the aircraft into its area of responsibility.

d) notify:

1) the operator or its designated representative;

2) the appropriate rescue coordination centre in accordance with appropriate alerting procedures;

3) 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.

e) relay appropriate messages, relating to the circumstances associated with the unlawful interference, between the aircraft and designated authorities

Note. — These messages include, but are not limited to: initial messages declaring an incident; update messages on an existing incident; messages containing decisions made by appropriate decision makers; messages on transfer of responsibility; messages on acceptance of responsibility; messages indicating that an entity is no longer involved in an incident; and messages closing an incident.

13.1.3.4 The ATS provider shall ensure that 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 the aircraft, advise the flight crew by the most expeditious means through other ATS units or other channels.

13.1.3.5 The ATS provider shall ensure that the ATS unit in communication with the aircraft shall ascertain the intentions of the flight crew and report those intentions to other ATS units which may be concerned with the flight.

13.1.3.6 The ATS provider shall ensure that the aircraft shall be handled in the most expeditious manner while ensuring, to the extent possible, the safety of other aircraft and that personnel and ground installations are not put at risk.

13.1.3.7 Aircraft in flight shall be given re-clearance to a requested new destination without delay. Any request by the flight crew to climb or descend for the purpose of equalizing or reducing the differential between the outside air pressure and the cabin air pressure shall be approved as soon as possible.

13.1.3.9 The ATS provider shall ensure ATS units shall not provide any advice or suggestions concerning action to be taken by the flight crew in relation to an explosive device.

13.1.3.10 The ATS provider shall ensure 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. 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. The taxi clearance shall specify the taxi route to be followed to the parking position. This route shall be selected with a view to minimizing any security risks to the public, other aircraft and installations at the aerodrome.

13.1.4 Emergency descent

13.1.4.1 Action by the ATS Unit.

13.1.4.1.1 Upon recognition that an aircraft is making an emergency descent, all appropriate action shall be taken immediately to safeguard all aircraft concerned. Appropriate actions may include the following, in the order appropriate for the circumstance:

a) broadcasting an emergency message;

b) issuing traffic information and/or instructions to aircraft affected by the descent;

c) advising the minimum flight altitude and altimeter setting for the area of operation; and

d) informing any other ATS units which may be affected by the emergency descent

13.1.4.2 Action by the pilot of the Aircraft in an Emergency Descent

13.1.4.2.1 The pilot shall take the following steps as soon as practicable in the order appropriate for the circumstance:

a) navigate as deemed appropriate by the pilot;

b) advise the appropriate ATS unit of the emergency descent and, if able, intentions;

c) set transponder to Code 7700 and, if applicable, select the appropriate emergency mode on ADS-B and/or ADS-C;

d) turn on aircraft exterior lights (commensurate with appropriate operating limitations);

e) watch for conflicting traffic both visually and by reference to ACAS (if equipped); and

f) when emergency descent is complete, coordinate further intentions with the appropriate ATS unit.

Note. — Procedures for the use of ACAS are contained in PANS-OPS, Volume I, Part III, Section 3, Chapter 3.

13.1.4.3 Action by the Pilot of the Aircraft receiving Emergency Descent Broadcast

13.1.4.3.1 The ATS provider shall ensure that unless specifically instructed by the ATS unit to clear the area or threatened by immediate danger, the pilot shall take the following actions:

a) continue according to current clearance and maintain listening watch on the frequency in use for any further instructions from the ATS unit; and

b) watch for conflicting traffic both visually and by reference to ACAS (if equipped).

13.2 Air-Ground Communications Failure

Note 1.— Procedures to be applied in relation to an aircraft experiencing air-ground communication failure when providing ATS surveillance services are contained in Chapter 8, Section 8.8.3.

Note 2.— An aircraft equipped with an SSR transponder is expected to operate the transponder on Mode A Code 7600 to indicate that it has experienced air-ground communication failure. An aircraft equipped with other surveillance system transmitters, including ADS-B and ADS-C, might indicate the loss of air-ground communication by all of the available means.

Note 3.— Some aircraft equipped with first generation ADS-B avionics have the capability to transmit a general emergency alert only, regardless of the code selected by the pilot.

Note 4.— See also Chapter 6, 6.3.2.5, concerning departure clearances containing no geographical or time limit for a 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

Note 5. — See also Chapter 5, 5.4.2.6.3.2, for additional requirements applying to communication failure during the application of the 50 NM longitudinal RNAV/RNP 10 separation minimum.

13.3.3 The ATS provider shall ensure that if the 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:

a) if in visual meteorological conditions:

1) continue to fly in visual meteorological conditions;

2) land at the nearest suitable aerodrome; and

3) report its arrival by the most expeditious means to the appropriate air traffic control unit; or

b) 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 a):

1) unless otherwise prescribed on the basis of a regional air navigation agreement, in airspace where procedural separation is being applied, 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

2) in airspace where an ATS surveillance system 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 the ADS-B transmitter is set to indicate the loss of air-ground communications; 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;

3) when being 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;

4) 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 5), hold over this aid or fix until commencement of descent;

5) commence descent from the navigation aid or fix specified in 4) at, or as close as possible to, the expected approach time last received and acknowledged; or, if no expected approach time has been received and acknowledged, at, or as close as possible to, the estimated time of arrival resulting from the current flight plan;

6) complete a normal instrument approach procedure as specified for the designated navigation aid or fix; and

7) land, if possible, within 30 minutes after the estimated time of arrival specified in 5) or the last acknowledged expected approach time, whichever is later.

13.3.4 Action taken to ensure suitable separation shall cease to be based on the assumption stated in 13.3.3 when:

a) it is determined that the aircraft is following a procedure differing from that in 13.3.3; or

b) through the use of electronic or other aids, air traffic control units determine that action differing from that required by 13.3.3 may be taken without impairing safety; or

c) positive information is received that the aircraft has landed.

13.3.5 The ATS provider shall ensure that as soon as it is known that two-way communication has failed, appropriate information describing the action

taken by the air traffic control unit, or instructions justified by any emergency situation, shall be transmitted blind for the attention of the aircraft concerned, on the frequencies available on which the aircraft is believed to be listening, including the voice frequencies of available radio navigation or approach aids. Information shall also be given concerning:

a) meteorological conditions favourable to a cloud-breaking procedure in areas where congested traffic may be avoided; and

b) meteorological conditions at suitable aerodromes.

13.3.6 The ATS provider shall ensure that pertinent information shall be given to other aircraft in the vicinity of the presumed position of the aircraft experiencing the failure.

13.3.7 The ATS provider shall ensure that as soon as it is known that an aircraft which is operating in its area of responsibility is experiencing an apparent radiocommunication failure, an air traffic services unit shall forward information concerning the radiocommunication failure to all air traffic services units concerned along the route of flight. The ACC in whose area the destination aerodrome is located shall take steps to obtain information on the alternate aerodrome(s) and other relevant information specified in the filed flight plan, if such information is not available.

13.3.8 The ATS provider shall ensure that if circumstances indicate that a controlled flight experiencing a communication failure might proceed to (one of) the alternate aerodrome(s) specified in the filed flight plan, the air traffic control unit(s) serving the alternate aerodrome(s) and any other air traffic control units that might be affected by a possible diversion shall be informed of the circumstances of the failure and requested to attempt to establish

communication with the aircraft at a time when the aircraft could possibly be within communication range. This shall apply particularly when, by agreement with the operator or a designated representative, a clearance has been transmitted blind to the aircraft concerned to proceed to an alternate aerodrome, or when meteorological conditions at the aerodrome of intended landing are such that a diversion to an alternate is considered likely.

13.3.9 The ATS provider shall ensure that when an air traffic control unit receives information that an aircraft, after experiencing a communication failure has re-established communication or has landed, that unit shall inform the air traffic services unit in whose area the aircraft was operating at the time the failure occurred, and other air traffic services units concerned along the route of flight, giving necessary information for the continuation of control if the aircraft is continuing in flight.

13.3.10 If the aircraft has not reported within thirty minutes after:

a) the estimated time of arrival furnished by the pilot;

b) the estimated time of arrival calculated by the ACC; or

c) the last acknowledged expected approach time,

whichever is latest, pertinent information concerning the aircraft shall be forwarded to aircraft operators, or their designated representatives, and pilots-in-command of any aircraft concerned and normal control resumed if they so desire. It is the responsibility of the aircraft operators, or their designated representatives, and pilots-in-command of aircraft to determine whether they will resume normal operations or take other action.

13.4 Assistance to VFR Flights

13.4.1 Strayed VFR flights and VFR flights encountering adverse meteorological conditions

Note. — A strayed aircraft is an aircraft which has deviated significantly from its intended track or which reports that it is lost.

13.4.1.1 A VFR 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 level;

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) ADS-B capability;

h) departure and destination aerodromes;

i) number of persons on board;

j) endurance.

13.4.1.3 Navigation assistance to help the pilot determine the aircraft position may be provided by use of an ATS surveillance system, 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.

13.5 Other In-Flight Contingencies

Note. — The texts of 13.5.1 and 13.5.2 are reproduced from Annex 11, Chapter 2, and have the status of Standards.

15.5.1 Strayed or unidentified aircraft

Note 1. — The terms "strayed aircraft" and "unidentified aircraft" in this paragraph have the following meanings:
Strayed aircraft. *An aircraft which has deviated significantly from its intended track or which reports that it is lost.*
Unidentified aircraft. *An aircraft which has been observed or reported to be operating in a given area but whose identity has not been established*.

Note 2. — An aircraft may be considered, at the same time, as a "strayed aircraft" by one unit and as an "unidentified aircraft" by another unit.
Note 3. — A strayed or unidentified aircraft may be suspected as being the subject of unlawful interference. See Annex 11, 2.25.1.

13.5.1.1 The ATS provider shall ensure that as soon as an air traffic services unit becomes aware of a strayed aircraft, it shall take all necessary steps as outlined in 13.5.1.1.1 and 13.5.1.1.2 to assist the aircraft and to safeguard its flight.

Note. — Navigational assistance by an air traffic services unit is particularly important if the unit becomes aware of an aircraft straying, or about to stray, into an area where there is a risk of interception or other hazard to its safety.

13.5.1.1.1 The ATS provider shall ensure that If the 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 ATS units into whose area the aircraft may have strayed or may stray, taking into account all the factors which may have affected the navigation of the aircraft in the circumstances;

d) inform, in accordance with locally agreed procedures, appropriate military units and provide them with pertinent flight plan and other data concerning the strayed aircraft;

e) request from the units referred to in c) and d) 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 ATS units informed in accordance with c).

13.5.1.1.2 When the aircraft's position is established, the air traffic services unit shall:

a) advise the aircraft of its position and corrective action to be taken; and

b) provide, as necessary, other ATS units and appropriate military units with relevant information concerning the strayed aircraft and any advice given to that aircraft.

13.5.1.2 The ATS provider shall ensure that as soon as an air traffic services unit becomes aware of an unidentified aircraft in its area, it shall endeavour 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 air traffic

services unit shall take such of the following steps as are appropriate in the circumstances:

a) attempt to establish two-way communication with the aircraft;

b) inquire of other air traffic services units within the FIR about the flight and request their assistance in establishing two-way communication with the aircraft;

c) inquire of air traffic services units serving the adjacent FIRs 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.

13.5.1.2.1 The ATS provider shall ensure that air traffic services unit shall, as necessary, inform the appropriate military unit as soon as the identity of the aircraft has been established.

13.5.2 Interception of civil aircraft

13.5.2.1 The ATS provider shall ensure that 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 via any means available, 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 coordination with the intercept control unit take all necessary steps to ensure the safety of the intercepted aircraft; and

f) inform ATS units serving adjacent FIRs if it appears that the aircraft has strayed from such adjacent FIRs.

13.5.2.2 The ATS provider shall ensure that as soon as an air traffic services unit learns that an aircraft is being intercepted outside its area of responsibility, it shall take such of the following steps as are appropriate in the circumstances:

a) inform the ATS unit 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 13.5.2.1;

b) relay messages between the intercepted aircraft and the appropriate ATS unit, the intercept control unit or the intercepting aircraft.

13.5.3 Fuel dumping

13.5.3.1 General

13.5.3.1.1 An aircraft in an emergency or other urgent situation may need to dump fuel so as to reduce to maximum landing mass in order to effect a safe landing.

13.5.3.1.2 When an aircraft operating within controlled airspace needs to dump fuel, the light crew shall advise ATC. The ATC unit should then coordinate with the flight crew the following;

a) the route to be flown, which, if possible, should be clear of cities and towns, preferably over water and away from areas where thunderstorms have been reported or are expected;

b) the level to be used, which should be not less than 1 800 m (6 000 ft); and

c) the duration of the fuel dumping.

13.5.2 Fuel emergency and minimum fuel

13.5.2.1 The ATS provider shall ensure that when a pilot reports a state of minimum fuel, the controller shall inform the pilot as soon as practicable of any anticipated delays or that no delays are expected.

Note. — The declaration of MINIMUM FUEL informs ATC that all planned aerodrome options have been reduced to a specific aerodrome of intended landing, and any change to the existing clearance may result in landing with less than planned final reserve fuel. This is not an emergency situation but an indication that an emergency situation is possible should any additional delay occur.

13.6 ATC Contingencies

13.6. The procedures outlined below are intended as a general guide to air traffic services personnel.

13.6.1 Radiocommunications contingencies

13.6.1.1 General

13.6.1.1.1 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.

13.6.1.2 Ground Radio Failure

13.6.1.2.1 The ATS provider shall ensure that in the event of complete failure of the ground radio equipment used for ATC, the controller shall:

a) where aircraft are required to keep a listening watch on the emergency frequency 121.5 MHz, attempt to establish radiocommunications on that frequency;

b) without delay inform all adjacent control positions or ATC units, as applicable, of the failure;

c) appraise such positions or units of the current traffic situation;

d) if practicable, request their assistance, in respect of aircraft which may establish communications with those positions or units, in establishing separation between and maintaining control of such aircraft; and

e) instruct adjacent control positions or ATC units to hold or re-route all controlled flights outside the area of responsibility of the position or ATC unit that has experienced the failure until such time that the provision of normal services can be resumed.

13.6.1.2.2 The ATS provider shall ensure that in order to reduce the impact of complete ground radio equipment failure on the safety of air traffic, contingency procedures shall be established to be followed by control positions and ATC units in the event of such failures.

13.6.1.3 Blocked Frequency

13.6.1.3.1 The ATS provider shall ensure that in the event that the control frequency is inadvertently blocked by an aircraft transmitter, the following additional steps may 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.

13.6.1.4 Unauthorized Use of ATC Frequency

13.6.1.4.2 The ATS provider shall establish procedures to ensure that Flight 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.

13.6.1.4.3 The ATS provider shall ensure that when the transmission of false or deceptive instructions and clearances is detected, coordination shall be done to ensure all necessary action is taken to have the transmitter located and the transmission terminated.

13.7 Other ATC Contingency Procedures

13.7.1 Emergency separation

13.7.1.1The ATS provider shall ensure that 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. Additionally, all flight crews concerned shall be provided with essential traffic information.

13.7.2 Short-term conflict alert (STCA) procedures

Note 1. — The generation of short-term conflict alerts is a function based on surveillance data, integrated into an ATC system. The objective of the STCA function is to assist the controller in preventing collision between aircraft by generating, in a timely manner, an alert of a potential or actual infringement of separation minima.

Note 2. — In the STCA function the current and predicted three-dimensional positions of aircraft with pressure-altitude reporting capability are monitored for proximity. If the distance between the three-dimensional positions of two aircraft is predicted to be reduced to less than the defined applicable separation minima within a specified time period, an acoustic and/or visual alert will be generated to the controller within whose jurisdiction area the aircraft is operating.

13.7.2.1 The ATS provider shall ensure that 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.

13.7.2.2 The ATS provider shall ensure that 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.

13.7.3 Procedures in Regard to Aircraft Equipped with Airborne Collision Avoidance Systems (ACAS)

13.7.3.1 The ATS Provider shall ensure that the procedures to be applied for the provision of air traffic services to aircraft equipped with ACAS are identical to those applicable to non-ACAS equipped aircraft. In particular, the prevention of collisions, the establishment of appropriate separation and the information which might be provided in relation to conflicting traffic and to possible avoiding action shall conform with the normal ATS procedures and shall exclude consideration of aircraft capabilities dependent on ACAS equipment.

13.7.3.2 The ATS provider shall ensure that when a pilot reports an ACAS resolution advisory (RA), the controller shall not attempt to modify the aircraft flight path until the pilot reports "Clear of Conflict".

13.7.3.3 Once an aircraft departs from its ATC clearance or instruction in compliance with an RA, or a pilot reports an RA, 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 RA. The controller shall resume responsibility for providing separation for all the affected aircraft when:

a) the controller acknowledges a report from the flight crew that the aircraft has resumed the current clearance; or

b) the controller acknowledges a report from the flight crew that the aircraft is resuming the current clearance and issues an alternative clearance which is acknowledged by the flight crew.

Note. — Pilots are required to report RAs which require a deviation from the current ATC clearance or instruction (see PANS-OPS (Doc 8168), Volume I, Part III, Section 3, Chapter 3, 3.2 c) 4)). This report informs the controller that a deviation from clearance or instruction is taking place in response to an ACAS RA.

13.7.3.4 Following a significant ACAS event, controllers shall complete an air traffic incident report.

13.7.4 Minimum safe altitude warning (MSAW) procedures

Note 1. — The generation of minimum safe altitude warnings is a function of an ATC radar data-processing system. The objective of the MSAW function is to assist in the prevention of controlled flight into terrain accidents by generating, in a timely manner, a warning of the possible infringement of a minimum safe altitude.

Note 2. — In the MSAW function, the reported levels from aircraft with pressure-altitude reporting capability are monitored against defined minimum safe altitudes. When the level of an aircraft is detected or predicted to be less than the applicable minimum safe altitude, an acoustic and visual warning will be generated to the controller within whose jurisdiction area the aircraft is operating.

13.7.4.1 The ATS provider shall ensure that Local instructions concerning use of the MSAW function shall specify, *inter alia*:

a) the types of flight which are eligible for generation of MSAW;

b) the sectors or areas of airspace for which MSAW minimum safe altitudes have been defined and within which the MSAW function is implemented;

c) the values of the defined MSAW minimum safe altitudes;

d) the method of displaying the MSAW to the controller;

e) the parameters for generation of MSAW as well as warning time; and

f) conditions under which the MSAW function may be inhibited for individual aircraft tracks as well as procedures applicable in respect of flights for which MSAW has been inhibited.

13.7.4.2 The ATS provider shall ensure that in the event an MSAW is generated in respect of a controlled flight, the following action shall be taken without delay:

a) if the aircraft is being vectored, the aircraft shall be instructed to climb immediately to the applicable safe level and, if necessary to avoid terrain, be assigned a new heading;

b) in other cases, the flight crew shall immediately be advised that a minimum safe altitude warning has been generated and be instructed to check the level of the aircraft.

13.7.5 Autonomous runway incursion warning system (ARIWS)

Note 1. — The generation of ARIWS warnings is a function based on surveillance data. The objective of the ARIWS function is to assist flight crews and vehicle drivers in the prevention of runway incursions by generating, in a timely manner, a direct warning of a possible runway hazard making it unsafe to enter, to cross a runway or to take-off

Note 2. — The function of ARIWS is to operate independently from ATC, and the warnings are generated for pilots and vehicle drivers.
Note 3.— Annex 14, Volume I, Attachment A, Section 21, provides a description of an autonomous runway incursion warning system (ARIWS) and information on its use.

13.7.5.1 The ATS providere shall ensure that in the event an ARIWS warning is generated that conflicts with the ATC clearance, the following action shall be taken by flight crew and vehicle drivers:

a) the flight crew or vehicle driver shall give priority to the ARIWS warning over the ATC clearance. They shall not proceed onto the runway or commence the take-off roll. The flight crew or vehicle driver shall inform the controller of the ARIWS warning and await further clearance; and

b) in the event the aircraft or vehicle has initiated actions to comply with a clearance that conflicts with the warning, the flight crew or the vehicle driver shall use the warning to exercise their best judgement and full authority in the choice of the best course of action to resolve any potential conflict. The controller should be informed, when practicable, of the ARIWS warning.

13.7.5.2 The ATS providere shall ensure that ATS units have procedures in place for situations when controllers are informed of ARIWS warnings, including how to disable the ARIWS in case of malfunctions.

13.7.6 Change of radiotelephony call sign for aircraft

13.7.6.1 The ATS provider shall ensure that an ATC unit may instruct an aircraft to change its type of RTF call sign, in the interests of safety, when similarity between two or more aircraft RTF call signs are such that confusion is likely to occur.

13.7.6.1.1 The ATS provider shall ensure that any such change to the type of call sign shall be temporary and shall be applicable only within the airspace(s) where the confusion is likely to occur.

13.7.6.2 The ATS provider shall ensure that when an ATC unit changes the type of call sign of an aircraft, that unit shall ensure that the aircraft reverts to the call sign indicated by the flight

plan when the aircraft is transferred to another ATC unit, except when the call sign change has been coordinated between the two ATC units concerned.

13.7.6.3 The ATS provider shall ensure that appropriate ATC unit shall advise the aircraft concerned when it is to revert to the call sign indicated by the flight plan.

13.8 Procedures for ATS Units when a Volcanic Ash Cloud is reported or Forecast

13.8.1 The ATS provider shall ensure that if a volcanic ash cloud is reported or forecast in the airspace for which the ATS unit is responsible, the following actions shall be taken:

a) relay pertinent information immediately to flight crews whose aircraft could be affected to ensure that they are ware of the ash cloud's current and forecast position and the flight levels affected;

b) accommodate requests for re-routing or level changes to the extent practicable;

c) suggest re-routing to avoid or exit areas of reported or forecast ash clouds when requested by the pilot or deemed necessary by the controller; and

d) when practicable, request a special air-report when the route of flight takes the aircraft into or near the forecast ash cloud and provide such special air-reports to the appropriate agencies.

Note 1.— Experience has shown that the recommended escape manoeuvre for an aircraft which has encountered an ash cloud is to reverse its course and begin a descent if terrain permits. The final responsibility for this decision, however, rests with the pilot-in-command as specified in the Manual on Volcanic Ash, *Radioactive Material and Toxic Chemical* Clouds *(Doc 9691), 5.2.4.1.*

Note 2.— The final authority as to the disposition of the aircraft, whether to avoid or proceed through a reported or forecast ash cloud, rests with the pilot-in-command, as prescribed in Annex 2, 2.4.

13.8.2 The ATS provider shall ensure that when the flight crew advises the ATS unit that the aircraft has inadvertently entered a volcanic ash cloud, the ATS unit shall:

a) take such action applicable to an aircraft in an emergency situation; and

b) initiate modifications of route or level assigned only when requested by the pilot or necessitated by airspace requirements or traffic conditions.

Note 1.— General procedures to be applied when a pilot reports an emergency situation are contained in Chapter 13, 13.1.1 and 13.1.2.

Note 2.— Guidance material concerning the effect of volcanic ash and the impact of volcanic ash on aviation operational and support services is provided in Chapters 4 and 5 of Doc 9691.

Chapter 14: MISCELLANEOUS PROCEDURES

14.1 Responsibility in regard to Military Traffic

14.1.1 It is recognized that some military aeronautical operations necessitate non-compliance with certain air traffic procedures. The ATS provider shall ensure that the military authorities are asked to notify the air traffic control unit prior to undertaking such manoeuvres, whenever practicable in order to ensure afety of flight operations.

14.1.2 The ATS provider shall ensure that 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.

14.1.3 The ATS provider shall ensure that aircraft shall not be flown in formation except by prearrangement among the pilots-in –command of the aircraft taking part in the flight and, for formation flight in controlled airspace, in accordance with the following conditions;

a) The formation operates as a single aircraft with regard to navigation and position reporting;

b) separation between aircraft in the flight shall be the responsibility of the flight leader and the pilots-in-command of the other aircraft in the flight and shall include periods of transition when aircraft are maneuvering to attain their own separation within the formation and during join-up and breakaway; and

c) A distance not exceeding 0.5NM laterally and longitudinally and 100ft vertically from the flight leader shall be maintained by each aircraft.

14.1.4 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 ATS provider. The coordination shall be effected in accordance with the provisions of Part 22 of civil aviation regulations and this Standards and shall be completed early enough to permit timely promulgation of information in accordance with the provisions of Part 25 of Civil aviation regulations and Technical standards for Aeronautical Information Services. The ATS provider shall ensure that safety risk assessment is done to ensure safety of aircraft operations.

14.2 Responsibility in regard to Unmanned Free Balloons

14.2.1 The ATS provider shall ensure that on receipt of notification of the intended flight of a medium or heavy unmanned free balloon, the air traffic services unit shall arrange for the information to be disseminated to all concerned. The information shall include:

a) The balloon flight identification or project code name;

b) Balloon classification and description;

c) SSR code or NDB frequency as applicable;

d) The launch site;

e) The estimated time of the commencement of the launch or the planned period of the launches;

f) The expected direction of ascent;

g) The cruising level(s) (pressure-altitude); and

h) The estimated elapsed time to pass 18 000 m (60 000 ft) pressure-altitude, or to reach cruising level if at or below 18 000 m (60 000 ft), together with the estimated location.

14.2.2 The ATS provider shall ensure that on receipt of notification that a medium or heavy unmanned free balloon has been launched, the air traffic services unit shall arrange for the information to be disseminated to all concerned. The information shall include:

a) The balloon flight identification or project code name;

b) Balloon classification and description;

c) SSR code or NDB frequency as applicable;

d) The launch site;

e) The time of launch (es);

f) The estimated time at which 18 000 m (60 000 ft) pressure-altitude will be passed, or the estimated time at which the cruising level will be reached if at or below 18 000 m (60 000 ft), and the estimated location;

g) The estimated date and time of termination of the flight; and

h) The planned location of ground contact, when applicable.

14.2.3 The ATS provider shall ensure that when there is reasonable expectation that a heavy or medium unmanned free balloon will cross international borders, the appropriate ATS unit shall arrange for the pre-launch and the launch notifications to be sent by NOTAM to the ATS unit(s) in the State(s) concerned. If agreed between the States concerned, the launch notification may be transmitted orally by direct ATS speech circuit between the ACCs/flight information centres involved.

14.2.4 The ATS provider shall ensure that Air traffic services units shall maintain radar and/or ADS-B surveillance of medium and heavy unmanned free balloons to the extent possible and, if necessary and on the request of the pilot of an aircraft, provide separation using an ATS surveillance system between the aircraft and such balloons which are identified or their exact position is known.

14.3 Air Traffic Incident Report

14.3.1 The ATS provider shall ensure that 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), or other serious difficulty resulting in a hazard to aircraft, caused by, among others, faulty procedures, non-compliance with procedures, or failure of ground facilities.

14.3.2 Aircraft accidents and incidents are often reported through ATS channels, such reports and any associated information shall be recorded by the unit concerned and forwarded to the Authority (RCAA).

Note. — A model air traffic incident report form together with instructions for its completion is at Appendix 8. Further information regarding air traffic incidents is contained in the Air Traffic Services Planning Manual (Doc 9426)

14.3.3The ATS Provider shall ensure that following categories of occurrences, which are not exhaustive and only serve as guidance, shall be reported to FSS:

a) Accidents, for example:

i) Mid Air collision

ii) Controlled Flight into Terrain (CFIT)

iii) Collision on the ground between aircraft

iv) Collision between an airborne aircraft and vehicle/ another aircraft on the ground

v) Collision on the ground between aircraft and vehicle, person, or obstructions(s)

vi) Other accidents of special interest would include" losses of control in flight", due to VORTEX or meteorological conditions

b) Incidents, for example

i) Instances of near collision (encompassing specific situations where one aircraft and another aircraft/ground terrain/vehicle/person or object are to be too close to each other) such as:

- Separation minima infringement
- Runway incursion where avoiding action was necessary

ii) Controlled flight into terrain only marginally avoided.

iii) Take-offs or aborted take-offs on a closed or engaged runway, on a taxiway or unassigned runway.

iv) Landings or attempted landings on a closed or engaged runway, on a taxiway or unassigned runway

v) Take-off or landing incidents. Incidents such as undershooting, overrunning or running off the side of runways.

vi) Potential for collision or near collision (encompassing specific situations having the potential to be an accident or a near collision, if another aircraft is in the vicinity):

- Runway incursion where no avoiding action is necessary
- Aircraft deviation from ATC clearance
- Aircraft deviation from applicable published ATM regulation
  - Aircraft deviation from applicable published ATM procedures
  - Unauthorized penetration of airspace
  - Deviation from aircraft ATM-related equipment carriage and operations, as mandated in applicable regulations(s)

14.3.5 The example of incidents given in 14.3.3 (b) above may be classified as serious incidents depending on the severity and the risk posed by the occurrencies.

14.4 Notification of suspected communicable diseases, or other public health risk, on Board an aircraft

14.4.1 The ATS provider shall establish procedures to ensure that flight crew of an en-route aircraft shall, upon identifying a suspected case(s) of communicable disease, or other public health risk, on board the aircraft, promptly notify the ATS unit with which the pilot is communicating, the information listed below:

a) Aircraft identification;

b) Departure aerodrome;

c) Destination aerodrome;

d) estimated time of arrival;

e) Number of persons on board;

f) Number of suspected case(s) on board; and

g) Nature of the public health risk, if known.

14.4.2 The ATS Provider shall establish procedures to ensure that the pilot-in-command of an aircraft shall ensure that a suspected communicable disease is reported promptly to air traffic control, in order to facilitate provision for the presence of any special medical personnel and equipment necessary for the management of public health risks on arrival.

14.4.3The ATS Provider shall ensure that the ATS unit, upon receipt of information from a pilot regarding suspected case(s) of communicable disease, or other public health risk, on board the aircraft, shall forward a message as soon as possible to the ATS unit serving the destination/departure, unless procedures exist to notify the appropriate authority designated by the State and the aircraft operator or its designated representative.

14.4.4 3The ATS Provider shall ensure that when a report of a suspected case(s) of communicable disease, or other public health risk, on board an aircraft is received by an ATS unit serving the destination/departure, from another ATS unit or from an aircraft or an aircraft operator, the unit concerned shall forward a message as soon as possible to the public health authority (PHA) or the appropriate authority (RCAA) as well as the aircraft operator or its designated representative, and the aerodrome authority

APPENDIX

APPENDIX 1: PRINCIPLES GOVERNING THE IDENTIFICATION OF NAVIGATION SPECIFICATIONS AND THE IDENTIFICATION OF ATS ROUTES OTHER THAN STANDARD DEPARTURE AND ARRIVAL ROUTES

(Chapter 2, Sections 2.7 and 2.12 refer)

Note - See Appendix 3 concerning the identification of standard departure and arrival routes and associated procedures. Guidance material on the establishment of these routes and procedures is contained in the Air Traffic Services Planning Manual *(ICAO Doc 9426).*

1. Designators for ATS routes and navigation specifications

1.1 The purpose of a system of route designators and navigation specification(s) applicable to specified ATS route segment(s), route(s) or area is to allow both pilots and ATS, taking into account automation requirements:

a) to make unambiguous reference to any ATS route without the need to resort to the use of geographical coordinates or other means in order to describe it;
b) to relate an ATS route to a specific vertical structure of the airspace, as applicable;
c) to indicate a required level of navigation performance accuracy, when operating along an ATS route or within a specified area; and
d) to indicate that a route is used primarily or exclusively by certain types of aircraft.

Note 1.— Specifications concerning the publication of navigation specifications are given in Annex 4, Chapter 7, and PANS-AIM (Doc 10066), Appendix 2.

Note 2. — In relation to this appendix and for flight planning purposes, a prescribed navigation specification is not considered an integral part of the ATS route designator.

1.2 In order to meet this purpose, the designation system shall:

a) permit the identification of any ATS route in a simple and unique manner;
b) avoid redundancy;
c) be usable by both ground and airborne automation systems;
d) permit utmost brevity in operational use; and
e) provide sufficient possibility of extension to cater for any future requirements without the need for fundamental changes.

1.3 Controlled, advisory and uncontrolled ATS routes, with the exception of standard arrival and departure routes, shall therefore be identified as specified hereafter.

2. Composition of designator

2.1 The ATS route designator shall consist of a basic designator supplemented, if necessary, by:

a) one prefix as prescribed in 2.3; and

b) one additional letter as prescribed in 2.4.

2.1.1 The number of characters required to compose the designator shall not exceed six characters.

2.1.2 The number of characters required to compose the designator shall, whenever possible, be kept to a maximum of five characters.

2.2 The basic designator shall consist of one letter of the alphabet followed by a number from 1 to 999.

2.2.1 Selection of the letter shall be made from those listed hereunder:

a) A, B, G, R for routes which form part of the regional networks of ATS routes and are not area navigation routes;

b) L, M, N, P for area navigation routes which form part of the regional networks of ATS routes;

c) H, J, V, W for routes which do not form part of the regional networks of ATS routes and are not area navigation routes;

d) Q, T, Y, Z for area navigation routes which do not form part of the regional networks of ATS routes.

2.3 Where applicable, one supplementary letter shall be added as a prefix to the basic designator in accordance with the following:

a) K to indicate a low-level route established for use primarily by helicopters;

b) U to indicate that the route or portion thereof is established in the upper airspace;

c) S to indicate a route established exclusively for use by supersonic aircraft during acceleration, deceleration and while in supersonic flight.

2.4 When prescribed by the appropriate ATS provider or on the basis of regional air navigation agreements, a supplementary letter may be added after the basic designator of the ATS route in question in order to indicate the type of service provided in accordance with the following:

a) the letter F to indicate that on the route or portion thereof advisory service only is provided;

b) the letter G to indicate that on the route or portion thereof flight information service only is provided.

Note 1. — Due to limitations in the display equipment on board aircraft, the supplementary letters "F" or "G" may not be displayed to the pilot.

Note 2.— Implementation of a route or a portion thereof as controlled route, advisory route or flight information route is indicated in aeronautical charts and aeronautical information publications in accordance with the provisions in Part III of this Manual.

3. Assignment of basic designators

3.1 Basic ATS route designators shall be assigned in accordance with the following principles.

3.1.1 The same basic designator shall be assigned to a main trunk route throughout its entire length, irrespective of terminal control areas, State or regions traversed.

Note. — This is of particular importance where automated ATS data processing and computerized airborne navigation equipment is used.

3.1.2 Where two or more trunk routes have a common segment, the segment in question shall be assigned each of the designators of the routes concerned, except where this would present difficulties in the provision of air traffic service, in which case, by common agreement, one designator only shall be assigned.

3.1.3 A basic designator assigned to one route shall not be assigned to any other route.

3.1.4 The Rwanda's requirements for designators shall be notified to the Regional Offices of ICAO for coordination.

4. Use of designators in communications

4.1 In printed communications, the designator shall be expressed at all times by not less than two and not more than six characters.

4.2 In voice communications, the basic letter of a designator shall be spoken in accordance with the ICAO spelling alphabet.

4.3 Where the prefixes K, U or S specified in 2.3 are used, they shall, in voice communications, be spoken as follows:

K — KOPTER

U — UPPER

S — SUPERSONIC

The word “kopter” shall be pronounced as in the word “helicopter” and the words “upper” and “supersonic” as in the English language.

4.4 Where the letters “F” or “G” specified in 2.4 are used, the flight crew shall not be required to use them in voice communications

APPENDIX 2: PRINCIPLES GOVERNING THE ESTABLISHMENT AND IDENTIFICATION OF SIGNIFICANT POINTS

(Chapter 2, Section 2.14 refers)

1. Establishment of significant points

1.1 Significant points shall, whenever possible, be established with reference to ground based radio navigation aids, preferably VHF or higher frequency aids.

1.2 Where such refresher-based radio navigation aids do not exist, significant points shall be established at locations which can be determined by self-contained airborne navigation aids, or, where navigation by visual reference to the ground is to be effected, by visual observation. Specific points may be designated as ‘‘transfer of control’’ points by agreement between adjacent air traffic control units or control positions concerned.

2. Designators for significant points marked by the site of a radio navigation aid

2.1 Plain language name for significant points marked by the site of a radio navigation aid

2.1.1 Whenever practicable, significant points shall be named with reference to an identifiable and preferably prominent geographical location.

2.1.2 In selecting a name for the significant point, care shall be taken to ensure that the following conditions are met:

a) the name shall not create difficulties in pronunciation for pilots or ATS personnel when speaking in the language used in ATS communications. Where the name of a geographical location in the national language selected for designating a significant point gives rise to difficulties in pronunciation, an abbreviated or contracted version of this name, which retains as much of its geographical significance as possible, shall be selected;

Example: FUERSTENFELDBRUCK = FURSTY

b) the name shall be easily recognizable in voice communications and shall be free of ambiguity with those of other significant points in the same general area. In addition, the name shall not create confusion with respect to other communications exchanged between air traffic services and pilots;

c) the name shall, if possible, consist of at least six letters and form two syllables and preferably not more than three;

d) The selected name shall be the same for both the significant point and the radio navigation aid marking it.

2.2 Composition of coded designators for significant points marked by the site of a radio navigation aid

2.2.1 The coded designator shall be the same as the radio identification of the radio navigation aid. It shall be so composed, if possible, as to facilitate association with the name of the point in plain language.

2.2.2 Coded designators shall not be duplicated within 1 100 km (600 NM) of the location of the radio navigation aid concerned, except as noted hereunder.

Note. — When two radio navigation aids operating in different bands of the frequency spectrum are situated at the same location, their radio identifications are normally the same.

2.3 The Authority's requirements for coded designators shall be notified to the Regional Offices of ICAO for coordination.

3. Designators for significant points not marked by the site of a radio navigation aid

3.1 Where a significant point is required at a position not marked by the site of a radio navigation aid, and is used for ATC purposes, it shall be designated by a unique fiveletter pronounceable "name-code". This name-code designator then serves as the name as well as the coded designator of the significant point.

Note.— The principles governing the use of alphanumeric name-codes in support of RNAV SIDs, STARs and instrument approach procedures are detailed in PANS-OPS (ICAO Doc 8168).

3.2 The name-code designator shall be selected so as to avoid any difficulties in pronunciation by pilots or ATS personnel when speaking in the language used in ATS communications.

Examples: ADOLA, KODAP

3.3 The name-code designator shall be easily recognizable in voice communications and shall be free of ambiguity with those used for other significant points in the same general area.

3.4 The unique five-letter pronounceable name-code designator assigned to a significant point shall not be assigned to any other significant point. When there is a need to relocate a significant point, a new name-code designator shall be chosen. In cases when the Authority wishes to keep the allocation of specific name-codes for reuse at a different location, such name-codes shall not be used until after a period of at least six months.

3.5 The name-code designators shall be notified to the Regional Offices of ICAO for coordination by 5LNC planner.

3.6 In areas where no system of fixed routes is established or where the routes followed by aircraft vary depending on operational considerations, significant points shall be determined and reported in terms of World Geodetic System — 1984 (WGS-84) geographical coordinates, except that permanently established significant points serving as exit and/or entry points into such areas shall be designated in accordance with the applicable provisions in 2 or 3.

4. Use of designators in communications

4.1 Normally the name selected in accordance with 2 or 3 shall be used to refer to the significant point in voice communications. If the plain language name for a significant point marked by the site of a radio navigation aid selected in accordance with 2.1 is not used, it shall be replaced by the coded designator which, in voice communications, shall be spoken in accordance with the ICAO spelling alphabet.

4.2 In printed and coded communications, only the coded designator or the selected name-code shall be used to refer to a significant point.

5. Significant points used for reporting purposes

5.1 In order to permit ATS to obtain information regarding the progress of aircraft in flight, selected significant points may need to be designated as reporting points.

5.2 In establishing such points, consideration shall be given to the following factors:

a) the type of air traffic services provided;
b) the amount of traffic normally encountered;
c) the accuracy with which aircraft are capable of adhering to the current flight plan;
d) the speed of the aircraft;
e) the separation minima applied;
f) the complexity of the airspace structure;
g) the control method(s) employed;
h) The start or end of significant phases of a flight, (climb, descent, change of direction, etc.);
i) transfer of control procedures;
j) safety and search and rescue aspects;
k) The cockpit and air-ground communication workload.

5.3 Reporting points shall be established either as “compulsory” or as “on-request”.

5.4 In establishing “compulsory” reporting points the following principles shall apply:

a) compulsory reporting points shall be limited to the minimum necessary for the routine provision of information to air traffic services units on the progress of aircraft in flight,

bearing in mind the need to keep cockpit and controller workload and air-ground communications load to a minimum;

b) the availability of a radio navigation aid at a location shall not necessarily determine its designation as a compulsory reporting point;

c) Compulsory reporting points shall not necessarily be established at flight information region or control area boundaries.

5.5 "On-request" reporting points may be established in relation to the requirements of air traffic services for additional position reports when traffic conditions so demand.

5.6 The designation of compulsory and on-request reporting points shall be reviewed regularly with a view to keeping the requirements for routine position reporting to the minimum necessary to ensure efficient air traffic services.

5.7 Routine reporting over compulsory reporting points shall not systematically be made mandatory for all flights in all circumstances. In applying this principle, particular attention shall be given to the following:

a) high-speed, high-flying aircraft shall not be required to make routine position reports over all reporting points established as compulsory for low-speed, lowflying aircraft;

b) Aircraft transiting through a terminal control area shall not be required to make routine position reports as frequently as arriving and departing aircraft.

5.8 In areas where the above principles regarding the establishment of reporting points would not be practicable, a reporting system with reference to meridians of longitude or parallels of latitude expressed in whole degrees may be established

APPENDIX 3. PRINCIPLES GOVERNING THE IDENTIFICATION OF STANDARD DEPARTURE AND ARRIVAL ROUTES AND ASSOCIATED PROCEDURES

Note. — Material relating to the establishment of standard departure and arrival routes and associated procedures is contained in the Air Traffic Services Planning Manual *(Doc 9426).*

1. Designators for standard departure and arrival routes and associated procedures

Note. — In the following text, the term "route" is used in the meaning of "route and associated procedures".

1.1 The system of designators shall:

a) permit the identification of each route in a simple and unambiguous manner;

b) make a clear distinction between:

— departure routes and arrival routes;

— departure or arrival routes and other ATS routes;

— routes requiring navigation by reference to ground-based radio aids or self-contained airborne aids, and routes

requiring navigation by visual reference to the ground;

c) be compatible with ATS and aircraft data processing and display requirements;

d) be of utmost brevity in its operational application;

e) avoid redundancy;

f) provide sufficient possibility for extension to cater for any future requirements without the need for fundamental changes.

1.2 Each route shall be identified by a plain language designator and a corresponding coded designator.

1.3 The designators shall, in voice communications, be easily recognizable as relating to a standard departure or arrival route and shall not create any difficulties in pronunciation for pilots and ATS personnel.

2. Composition of designators

2.1 Plain language designator

2.1.1 The plain language designator of a standard departure or arrival route shall consist of:

a) a basic indicator; followed by

b) a validity indicator; followed by

c) a route indicator, where required; followed by

d) the word "departure" or "arrival"; followed by

e) the word “visual”, if the route has been established for use by aircraft operating in accordance with the visual flight rules (VFR).

2.1.2 The basic indicator shall be the name or name-code of the significant point where a standard departure route terminates or a standard arrival route begins.

2.1.3 The validity indicator shall be a number from 1 to 9.

2.1.4 The route indicator shall be one letter of the alphabet. The letters “I” and “O” shall not be used.

2.2 Coded designator

2.2.1 The coded designator of a standard departure or arrival route, instrument or visual, shall consist of:

a) the coded designator or name-code of the significant point described in 2.1.1 a); followed by

b) the validity indicator in 2.1.1 b); followed by

c) the route indicator in 2.1.1 c), where required.

Note.— Limitations in the display equipment on board aircraft may require shortening of the basic indicator, if that indicator is a five-letter name-code, e.g. KODAP. The manner in which such an indicator is shortened is left to the discretion of operators.

3. Assignment of designators

3.1 Each route shall be assigned a separate designator.

3.2 To distinguish between two or more routes which relate to the same significant point (and therefore are assigned the same basic indicator), a separate route indicator as described in 2.1.4 shall be assigned to each route.

4. Assignment of validity indicators

4.1 A validity indicator shall be assigned to each route to identify the route which is currently in effect.

4.2 The first validity indicator to be assigned shall be the number “1”.

4.3 Whenever a route is amended, a new validity indicator, consisting of the next higher number, shall be assigned.

The number “9” shall be followed by the number “1”.

5. Examples of plain language and coded designators

5.1 *Example 1*: Standard departure route — instrument:

a) Plain language designator: BRECON ONE DEPARTURE

b) Coded designator: BCN 1

5.1.1 *Meaning*: The designator identifies a standard instrument departure route which terminates at the significant point BRECON (basic indicator). BRECON is a radio navigation facility with the identification BCN (basic indicator of the coded designator). The validity indicator ONE (1 in the coded designator) signifies either that the original version of the route is still in effect or that a change has been made from the previous version NINE (9) to the now effective version ONE (1) (see

4.3). The absence of a route indicator (see 2.1.4 and 3.2) signifies that only one route, in this case a departure route, has been established with reference to BRECON.

5.2 *Example 2*: Standard arrival route — instrument:

a) Plain language designator: KODAP TWO ALPHA ARRIVAL

5.2.1 *Meaning*: This designator identifies a standard instrument arrival route which begins at the significant point KODAP (basic indicator). KODAP is a significant point not marked by the site of a radio navigation facility and therefore assigned a five-letter name-code in accordance with Appendix 2. The validity indicator TWO (2) signifies that a change has been made from the previous version ONE (1) to the now effective version TWO (2). The route indicator ALPHA (A) identifies one of several routes established with reference to KODAP and is a specific character assigned to this route.

5.3 *Example 3*: Standard departure route — visual:

a) Plain language designator: ADOLA FIVE BRAVO DEPARTURE VISUAL

b) Coded designator: ADOLA 5 B

5.3.1 *Meaning*: This designator identifies a standard departure route for controlled VFR flights which terminates at ADOLA, a significant point not marked by the site of a radio navigation facility. The validity indicator FIVE (5) signifies that a change has been made from the previous version FOUR (4) to the now effective version FIVE (5). The route indicator BRAVO (B) identifies one of several routes established with reference to DOLA.

6. Composition of designators for MLS/RNAV approach procedures

6.1 Plain language designator

6.1.1 The plain language designator of an MLS/RNAV approach procedure shall consist of:

a) “MLS”; followed by

b) a basic indicator; followed by

c) a validity indicator; followed by

d) a route indicator; followed by

e) the word “approach”; followed by

f) the designator of the runway for which the procedure is designed.

6.1.2 The basic indicator shall be the name or name-code of the significant point where the approach procedure begins.

6.1.3 The validity indicator shall be a number from 1 to 9.

6.1.4 The route indicator shall be one letter of the alphabet. The letters “I” and “O” shall not be used.

6.1.5 The designator of the runway shall be in accordance with Annex 14, Volume I, 5.2.2.

6.2 Coded designator

6.2.1 The coded designator of an MLS/RNAV approach procedure shall consist of:

a) “MLS”; followed by

b) the coded designator or name-code of the significant point described in 6.1.1 b); followed by

c) the validity indicator in 6.1.1 c); followed by

d) the route indicator in 6.1.1 d); followed by

e) the runway designator in 6.1.1 f).

6.3 Assignment of designators

6.3.1 The assignment of designators for MLS/RNAV approach procedures shall be in accordance with paragraph 3. Procedures having identical tracks but different flight profiles shall be assigned separate route indicators.

6.3.2 The route indicator letter for MLS/RNAV approach procedures shall be assigned uniquely to all approaches at an airport until all the letters have been used. Only then shall the route indicator letter be repeated. The use of the same route indicator for two routes using the same MLS ground facility shall not be permitted.

6.3.3 The assignment of validity indicator for approach procedures shall be in accordance with paragraph

6.4 Example of plain language and coded designators

6.4.1 *Example:*

a) Plain language designator: MLS HAPPY ONE ALPHA APPROACH RUNWAY ONE EIGHT LEFT

b) Coded designator: MLS HAPPY 1 A 18L

6.4.2 *Meaning:* The designator identifies an MLS/RNAV approach procedure which begins at the significant point HAPPY (basic indicator). HAPPY is a significant point not marked by the site of a radio navigation facility and therefore assigned a five-letter name-code in

accordance with Appendix 2. The validity indicator ONE (1) signifies that either the original version of the route is still in effect or a change has been made from the previous version NINE (9) to the now effective version ONE (1). The route indicator ALPHA (A) identifies one of several routes established with reference to HAPPY and is a specific character assigned to this route.

7. Use of designators in communications

7.1 In voice communications, only the plain language designator shall be used.

Note.— For the purpose of identification of routes, the words "departure", "arrival" and "visual" described in 2.1.1 d) and 2.1.1 e) are considered to be an integral element of the plain language designator.

7.2 In printed or coded communications, only the coded designator shall be used.

8. Display of routes and procedures to air traffic control

8.1 A detailed description of each currently effective standard departure and/or arrival route/approach procedure, including the plain language designator and the coded designator, shall be displayed at the working positions at which the routes/procedures are assigned to aircraft as part of an ATC clearance, or are otherwise of relevance in the provision of air traffic control services.

8.2 Whenever possible, a graphic portrayal of the routes/procedures shall also be displayed.

APPENDIX 4. ATS AIRSPACE CLASSES — SERVICES PROVIDED AND FLIGHT REQUIREMENTS

Class	*Type of flight*	*Separation provided*	*Service provided*	*Speed limitation**	*Radio communication requirement*	*Subject to an ATC clearance*
A	IFR only	All aircraft	Air traffic control service	Not applicable	Continuous two-way	Yes
B	IFR	All aircraft	Air traffic control service	Not applicable	Continuous two-way	Yes
	VFR	All aircraft	Air traffic control service	Not applicable	Continuous two-way	Yes
C	IFR	IFR from IFR IFR from VFR	Air traffic control service	Not applicable	Continuous two-way	Yes
	VFR	VFR from IFR	1) Air traffic control service for separation from IFR; 2) VFR/VFR traffic information (and traffic avoidance advice on request)	250 kt IAS below 3 050 m (10 000 ft) AMSL	Continuous two-way	Yes
D	IFR	IFR from IFR	Air traffic control service, traffic information about VFR flights (and traffic avoidance advice on request)	250 kt IAS below 3 050 m (10 000 ft) AMSL	Continuous two-way	Yes
	VFR	Nil	IFR/VFR and VFR/VFR traffic information (and traffic avoidance advice on request)	250 kt IAS below 3 050 m (10 000 ft) AMSL	Continuous two-way	Yes
E	IFR	IFR from IFR	Air traffic control service and, as far as practical, traffic information about VFR flights	250 kt IAS below 3 050 m (10 000 ft) AMSL	Continuous two-way	Yes
	VFR	Nil	Traffic information as far as practical	250 kt IAS below 3 050 m (10 000 ft) AMSL	No	No
F	IFR	IFR from IFR as far as practical	Air traffic advisory service; flight information service	250 kt IAS below 3 050 m (10 000 ft) AMSL	Continuous two-way	No
	VFR	Nil	Flight information service	250 kt IAS below 3 050 m (10 000 ft) AMSL	No	No
G	IFR	Nil	Flight information service	250 kt IAS below 3 050 m (10 000 ft) AMSL	Continuous two-way	No
	VFR	Nil	Flight information service	250 kt IAS below 3 050 m (10 000 ft) AMSL	No	No

* When the height of the transition altitude is lower than 3 050 m (10 000 ft) AMSL, FL 100 should be used in lieu of 10 000 ft.

APPENDIX 5: INSTRUCTIONS FOR AIR-REPORTING BY VOICE COMMUNICATIONS

1. Reporting instructions

2. Special air-report of volcanic activity form (Model VAR)

3. Examples

1. Reporting instructions

MODEL AIREP SPECIAL

TEM	PARAMETER	TRANSMIT IN TELEPHONY as appropriate
	Message-type designator: • special air-report	[AIREP] SPECIAL

Section 1	1	Aircraft identification	*(aircraft identification)*
	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)* NEXT
Section 2	7	Estimated time of arrival	*(aerodrome) (time)*
	8	Endurance	ENDURANCE *(hours and minutes)*
Section 3	9	Phenomenon encountered or observed, prompting a special air-report: • Moderate turbulence • Severe turbulence • Moderate icing • Severe icing • Severe mountainwave • Thunderstorms without hail • Thunderstorms with hail • Heavy dust/sandstorm • Volcanic ash cloud • Pre-eruption volcanic activity or volcanic eruption Runway braking action • Good • Good to Medium • Medium • Medium to Poor • Poor • Less than Poor	 TURBULENCE MODERATE TURBULENCE SEVERE ICING MODERATE ICING SEVERE MOUNTAINWAVE SEVERE THUNDERSTORMS THUNDERSTORMS WITH HAIL DUSTSTORM *or* SANDSTORM HEAVY VOLCANIC ASH CLOUD PRE-ERUPTION VOLCANIC ACTIVITY *or* VOLCANIC ERUPTION GOOD GOOD TO MEDIUM MEDIUM MEDIUM TO POOR POOR LESS THAN POOR

1. Position reports and special air-reports

1.1 Section 1 is obligatory for position reports and special air-reports, although Items 5 and 6 thereof may be omitted when prescribed in *Regional Supplementary Procedures*; Section 2 shall be added, in whole or in part, only when so requested by the operator or its designated representative, or when deemed necessary by the pilot-in-command; Section 3 shall be included in special air-reports.

1.2 Special air-reports shall be made whenever any of the phenomena listed under Item 15 are observed or encountered. Items 1 to 4 of Section 1 and the appropriate phenomenon specified in Section 3, Item 15, are required from all aircraft. The phenomena listed under "SST" shall be reported only by supersonic transport at transonic and supersonic cruising levels.

1.3 In the case of special air-reports containing information on volcanic activity, a post-flight report shall be made on the volcanic activity reporting form (Model VAR). All elements which are observed shall be recorded and indicated respectively in the appropriate
places on the form Model VAR.

1.4 Special air-reports shall be made as soon as practicable after a phenomenon calling for a special air-report has been observed.

1.5 If a phenomenon warranting the making of a special air-report is observed at or near the time or place where a routine air-report is to be made, a special air-report shall be made instead.

2. Detailed reporting instructions

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

— MESSAGE TYPE DESIGNATOR. Report "SPECIAL" for a special air-report.

Section 1

Item 1 — AIRCRAFT IDENTIFICATION. Report the aircraft radiotelephony call sign as prescribed in Annex 10, Volume II, Chapter 5.

Item 2 — POSITION. Report position in latitude (degrees as 2 numerics or degrees and minutes as 4 numerics, followed by "North" or "South") and longitude (degrees as 3 numerics or degrees and minutes as 5 numerics, followed by "East" or "West"), or as a significant point identified by a coded designator (2 to 5 characters), or as a significant point followed by magnetic bearing (3 numerics) and distance in nautical miles from the point (e.g. "4620North07805West", "4620North07800West", "4600North07800West", LN ("LIMA NOVEMBER"), "MAY", "HADDY" or "DUB 180 DEGREES 40 MILES"). Precede significant point by "ABEAM", if applicable.

Item 3 — TIME. Report time in hours and minutes UTC (4 numerics) unless reporting time in minutes past the hour (2 numerics) is prescribed on the basis of regional air navigation agreements. The time reported must be the actual time of the aircraft at the position and not the time of origination or transmission of the report. Time shall always be reported in hours and minutes UTC when making a special air-report.

Item 4 — FLIGHT LEVEL OR ALTITUDE. Report flight level by 3 numerics (e.g. "FLIGHT LEVEL 310"), when on standard pressure altimeter setting. Report altitude in metres followed by "METRES" or in feet followed by "FEET", when on QNH. Report "CLIMBING" (followed by the level) when climbing, or "DESCENDING" (followed by the level) when descending, to a new level after passing the significant point.

Item 5 — NEXT POSITION AND ESTIMATED TIME OVER. Report the next reporting point and the estimated time over such reporting point, or report the estimated position that will be reached one hour later, according to the position reporting procedures in force.

Use the data conventions specified in Item 2 for position. Report the estimated time over this position. Report time in hours and minutes UTC (4 numerics) unless reporting time in minutes past the hour (2 numerics) as prescribed on the basis of regional air navigation agreements.

Item 6 — ENSUING SIGNIFICANT POINT. Report the ensuing significant point following the "next position and estimated time over".

Section 2

Item 7 — ESTIMATED TIME OF ARRIVAL. Report the name of the aerodrome of the first intended landing, followed by the estimated time of arrival at this aerodrome in hours and minutes UTC (4 numerics).

Item 8 — ENDURANCE. Report "ENDURANCE" followed by fuel endurance in hours and minutes (4 numerics).

Section 3

Item 9 — PHENOMENON PROMPTING A SPECIAL AIR-REPORT. Report one of the following phenomena encountered or observed:

• moderate turbulence as "TURBULENCE MODERATE" severe turbulence as "TURBULENCE SEVERE"

The following specifications apply:

Moderate — Conditions in which moderate changes in aircraft attitude and/or altitude may occur but the aircraft remains in positive control at all times. Usually, small variations in

airspeed. Changes in accelerometer readings of 0.5 g to 1.0 g at the aircraft's centre of gravity. Difficulty in walking. Occupants feel strain against seat belts. Loose objects move about.

Severe — Conditions in which abrupt changes in aircraft attitude and/or altitude occur; aircraft may be out of control for short periods. Usually, large variations in airspeed. Changes in accelerometer readings greater than 1.0 g at the aircraft's centre of gravity. Occupants are forced violently against seat belts. Loose objects are tossed about.

• moderate icing as "ICING MODERATE" severe icing as "ICING SEVERE"

The following specifications apply:

Moderate — Conditions in which change of heading and/or altitude may be considered desirable.

Severe — Conditions in which immediate change of heading and/or altitude is considered essential.

• Severe mountainwave as "MOUNTAINWAVE SEVERE"

The following specification applies:

Severe — Conditions in which the accompanying downdraft is 3.0 m/s (600 ft/min) or more and/or severe turbulence is encountered.

• thunderstorm without hail as "THUNDERSTORM" thunderstorm with hail as "THUNDERSTORM WITH HAIL"

The following specification applies:

Only report those thunderstorms which are:

• obscured in haze; or

• embedded in cloud; or

• widespread; or

• forming a squall-line.

• heavy duststorm or sandstorm as "DUSTSTORM *or* SANDSTORM HEAVY"

• volcanic ash cloud as "VOLCANIC ASH CLOUD"

• pre-eruption volcanic activity or a volcanic eruption as "PRE-ERUPTION VOLCANIC ACTIVITY *or* VOLCANIC ERUPTION"

The following specification applies:

Pre-eruption volcanic activity in this context means unusual and/or increasing volcanic activity which could presage a volcanic eruption.

Note.— In case of volcanic ash cloud, pre-eruption volcanic activity or volcanic eruption, in accordance with Chapter 4, 4.12.3, a post-flight report shall also be made on the special air-report of volcanic activity form (Model VAR).

• Good braking action as “BRAKING ACTION GOOD”

Good to medium braking action as “BRAKING ACTION GOOD TO MEDIUM”

• Medium braking action as “BRAKING ACTION MEDIUM”

• Medium to poor braking action as “BRAKING ACTION MEDIUM TO POOR”

• Poor braking action as “BRAKING ACTION POOR”

• Less than poor braking action as “BRAKING ACTION LESS THAN POOR”

The following specifications apply:

Good — Braking deceleration is normal for the wheel braking effort applied and directional control is normal.

Good to medium — Braking deceleration or directional control is between Good and Medium.

Medium — Braking deceleration is noticeably reduced for the wheel braking effort applied or directional control is noticeably reduced.

Medium to poor — Braking deceleration or directional control is between Medium and Poor.

Poor — Braking deceleration is significantly reduced for the wheel braking effort applied or directional control is significantly reduced.

Less than poor — Braking deceleration is minimal to non-existent for the wheel braking effort applied or directional control is uncertain.

2.2 Information recorded on the volcanic activity reporting form (Model VAR) is not for transmission by RTF but, on arrival at an aerodrome, is to be delivered without delay by the operator or a flight crew member to the aerodrome meteorological office. If such an office is not easily accessible, the completed form shall be delivered in accordance with local arrangements made between the meteorological and ATS authorities and the operator.

3. Forwarding of meteorological information received by voice communications

When receiving special air-reports, air traffic services units shall forward these air-reports without delay to the associated meteorological watch office (MWO). In order to ensure assimilation of air-reports in ground-based automated systems, the elements of such reports shall be transmitted using the data conventions specified below and in the order prescribed.

— ADDRESSEE. Record station called and, when necessary, relay required.

— MESSAGE TYPE DESIGNATOR. Record “ARS” for a special air-report.

Note.— Where air-reports are handled by automatic data processing equipment which cannot accept this message-type designator, in accordance with Chapter 11, 11.4.2.6.5.2, the use of a different message-type designator is permitted by regional air navigation agreement.

— AIRCRAFT IDENTIFICATION. Record the aircraft identification using the data convention specified for Item 7 of the flight plan, without a space between the operator's designator and the aircraft registration or flight identification, if used (e.g. New Zealand 103 as ANZ103).

Section 1

Item 0 — POSITION. Record position in latitude (degrees as 2 numerics or degrees and minutes as 4 numerics, followed without a space by N or S) and longitude (degrees as 3 numerics or degrees and minutes as 5 numerics, followed without a space by E or W), or as a significant point identified by a coded designator (2 to 5 characters), or as a significant point followed by magnetic bearing (3 numerics) and distance in nautical miles (3 numerics) from the point (e.g. 4620N07805W, 4620N078W, 46N078W, LN, MAY, HADDY or DUB180040). Precede significant point by "ABM" (abeam), if applicable.

Item 1 — TIME. Record time in hours and minutes UTC (4 numerics).

Item 2 — FLIGHT LEVEL OR ALTITUDE. Record F followed by 3 numerics (e.g. F310), when a flight level is reported. Record altitude in metres followed by M or in feet followed by FT, when an altitude is reported. Record "ASC" (level) when climbing, or "DES" (level) when descending.

Section 3

Item 9 — PHENOMENON PROMPTING A SPECIAL AIR-REPORT. Record the phenomenon reported as follows:

• moderate turbulence as "TURB MOD"
• severe turbulence as "TURB SEV"
• moderate icing as "ICE MOD"
• severe icing as "ICE SEV"
• severe mountainwave as "MTW SEV"
• thunderstorm without hail as "TS"
• thunderstorm with hail as "TSGR"
• heavy sandstorm as "HVY SS"
• heavy duststorm as "HVY DS"
• volcanic ash cloud as "VA CLD"
• pre-eruption volcanic activity or a volcanic eruption as "VA"
• hail as "GR"

• cumulonimbus clouds as “CB”.

— TIME TRANSMITTED. Record only when Section 3 is transmitted.

2. Special air-report of volcanic activity form (Model VAR)

MODEL VAR: to be used for post-flight reporting

VOLCANIC ACTIVITY REPORT

Air-reports are critically important in assessing the hazards which volcanic ash cloud presents to aircraft operations.

OPERATOR:			A/C IDENTIFICATION: (as indicated on flight plan)		
PILOT-IN-COMMAND:					
DEP FROM:	DATE:	TIME; UTC:	ARR AT:	DATE:	TIME; UTC:
ADDRESSEE			AIREP SPECIAL		
Items 1–8 are to be reported immediately to the ATS unit that you are in contact with.					
1) AIRCRAFT IDENTIFICATION			2) POSITION		
3) TIME			4) FLIGHT LEVEL OR ALTITUDE		
5) VOLCANIC ACTIVITY OBSERVED AT (position or bearing, estimated level of ash cloud and distance from aircraft)					
6) AIR TEMPERATURE			7) SPOT WIND		
8) SUPPLEMENTARY INFORMATION SO_2 detected Yes ☐ No ☐ Ash encountered Yes ☐ No ☐			Other _____ (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 FEATURES OF ERUPTION	☐ (a) Lightning		☐ (b) Glow		☐ (c) Large rocks
	☐ (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 (Any information considered useful.)					

3. Examples

	AS SPOKEN IN RADIOTELEPHONY	**AS RECORDED BY THE AIR TRAFFIC SERVICES UNIT AND FORWARDED TO THE METEOROLOGICAL OFFICE CONCERNED**
I.-[1]	AIREP SPECIAL CLIPPER WUN ZERO WUN POSITION FIFE ZERO FOWer FIFE NORTH ZERO TOO ZERO WUN FIFE WEST WUN FIFE TREE SIX FLIGHT LEVEL TREE WUN ZERO CLIMBING TO FLIGHT LEVEL TREE FIFE ZERO THUNDERSTORMS WITH HAIL	I.- ARS PAA101 5045N02015W 1536 F310 ASC F350 TSGR
II.-[2]	SPECIAL NIUGINI TOO SEVen TREE OVER MADANG ZERO AIT FOWer SIX WUN NINer TOUSAND FEET TURBULENCE SEVERE	II.- ARS ANG273 MD 0846 19000FT TURB SEV

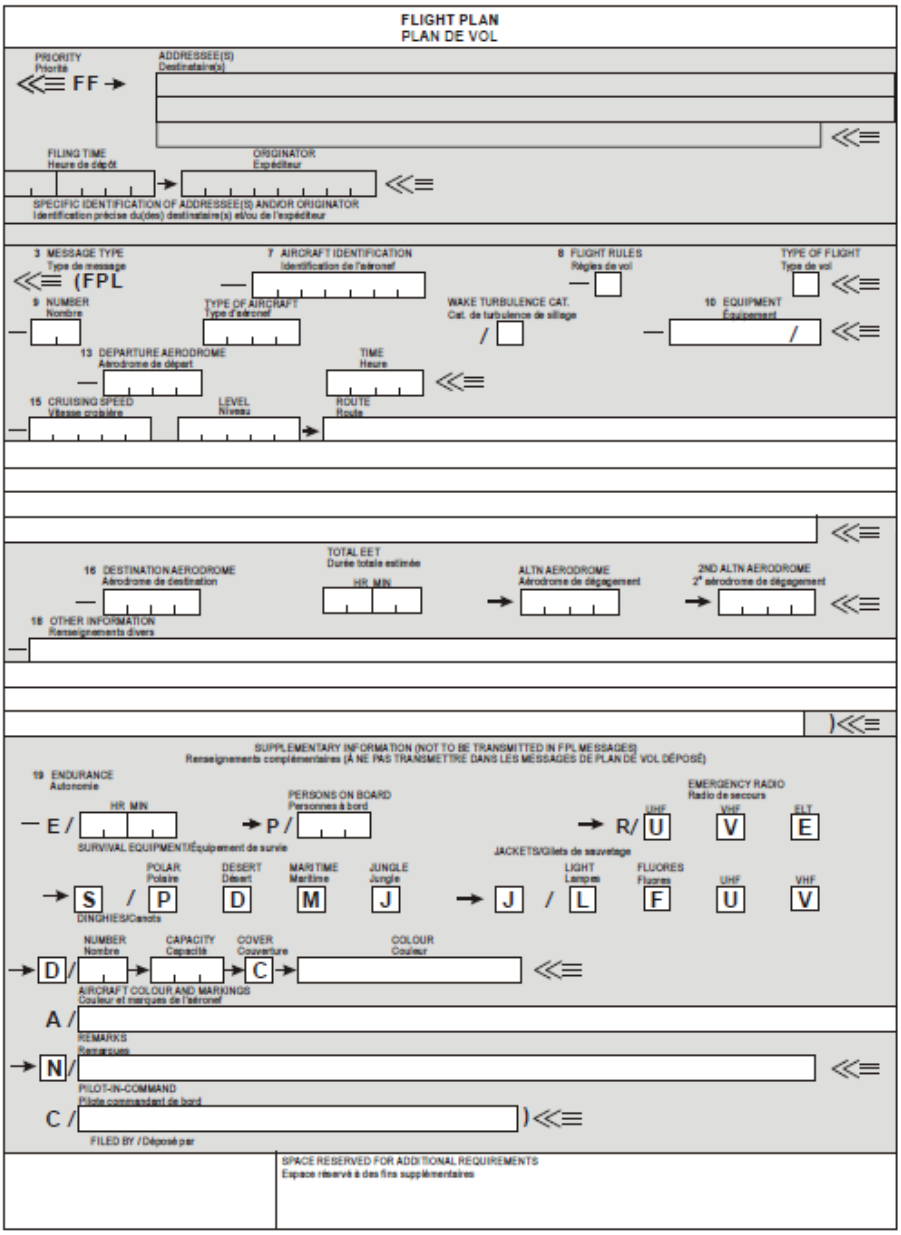
1. A special air-report which is required because of the occurrence of widespread thunderstorms with hail.

2. A special air-report which is required because of severe turbulence. The aircraft is on QNH altimeter setting.

APPENDIX 6: FLIGHT PLAN

1. ICAO model flight plan form
2. Instructions for the completion of the flight plan form
3. Instructions for the transmission of a filed flight plan (FPL) message
4. Instructions for the transmission of a supplementary flight plan (SPL) message
5. Example of a completed flight plan form
6. ICAO model repetitive flight plan (RPL) listing form
7. Instructions for the completion of the repetitive flight plan (RPL) listing form
8. Example of a completed repetitive flight plan (RPL) listing form

1. ICAO model flight plan form



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2. Instructions for the completion of the flight plan form

2.1 General

Adhere closely to the prescribed formats and manner of specifying data.

Commence inserting data in the first space provided. 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).

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.

2.2 Instructions for insertion of ATS data

Complete Items 7 to 18 as indicated hereunder.

Complete also Item 19 as indicated hereunder, when so required by the appropriate ATS authority or when otherwise deemed necessary.

Note 1.— Item numbers on the form are not consecutive, as they correspond to Field Type numbers in ATS messages.

Note 2.— Air traffic services data systems may impose communications or processing constraints on information in filed flight plans. Possible constraints may, for example, be limits with regard to item length, number of elements in the route item or total flight plan length. Significant constraints are documented in the relevant Aeronautical Information Publication.

ITEM 7: AIRCRAFT IDENTIFICATION (MAXIMUM 7 CHARACTERS)

INSERT one of the following aircraft identifications, not exceeding 7 alphanumeric characters and without hyphens or symbols:

a) the ICAO designator for the aircraft operating agency followed by the flight identification (e.g. KLM511, NGA213, JTR25) when in radiotelephony the call sign to be used by the aircraft will consist of the ICAO telephony designator for the operating agency followed by the flight identification (e.g. KLM511, NIGERIA 213, JESTER 25);

OR b) the nationality or common mark and registration mark of the aircraft (e.g. EIAKO, 4XBCD, N2567GA), when:

1) in radiotelephony the call sign to be used by the aircraft will consist of this identification alone (e.g. CGAJS), or preceded by the ICAO telephony designator for the aircraft operating agency (e.g. BLIZZARD CGAJS);

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2) the aircraft is not equipped with radio.

Note 1.— Standards for nationality, common and registration marks to be used are contained in Annex 7, section 3.

Note 2.— Provisions for the use of radiotelephony call signs are contained in Annex 10, Volume II, 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.

ITEM 8: FLIGHT RULES AND TYPE OF FLIGHT (ONE OR TWO CHARACTERS)

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 the 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

INSERT one of the following letters to denote the type of flight when so required by the appropriate ATS authority:

S if scheduled air service
N if non-scheduled air transport operation
G if general aviation
M if military
X if other than any of the defined categories above.

Specify status of a flight following the indicator STS in Item 18, or when necessary to denote other reasons for specific handling by ATS, indicate the reason following the indicator RMK in Item 18.

ITEM 9: 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.

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Type of aircraft (2 to 4 characters)

INSERT the appropriate designator as specified in 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 Item 18, 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, to indicate an aircraft type specified as such in Doc 8643, *Aircraft Type Designators*;

H — HEAVY, to indicate an aircraft type with a maximum certificated take-off mass of 136 000 kg or more, with the exception of aircraft types listed in Doc 8643 in the SUPER (J) category;

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.

ITEM 10: EQUIPMENT AND CAPABILITIES

Capabilities comprise the following elements:

a) presence of relevant serviceable equipment on board the aircraft;

b) equipment and capabilities commensurate with flight crew qualifications; and

c) where applicable, authorization from the appropriate authority.

Radiocommunication, navigation and approach aid equipment and capabilities

INSERT one letter as follows:

N if no COM/NAV/approach aid equipment for the route to be flown is carried, or the equipment is unserviceable,

OR S if standard COM/NAV/approach aid equipment for the route to be flown is carried and serviceable *(see Note 1)*,

AND/OR

INSERT one or more of the following letters to indicate the serviceable COM/NAV/approach aid equipment and capabilities available:

5/11/20
No. 9

A	GBAS landing system	J6	CPDLC FANS 1/A SATCOM (MTSAT)
B	LPV (APV with SBAS)	J7	CPDLC FANS 1/A SATCOM (Iridium)
C	LORAN C	K	MLS
D	DME	L	ILS
E1	FMC WPR ACARS	M1	ATC SATVOICE (INMARSAT)
E2	D-FIS ACARS	M2	ATC SATVOICE (MTSAT)
E3	PDC ACARS	M3	ATC SATVOICE (Iridium)
F	ADF	O	VOR
G	GNSS. If any portion of the flight is planned to be conducted under IFR, it refers to GNSS receivers that comply with the requirements of Annex 10, Volume I *(See Note 2)*	P1	CPDLC RCP 400 *(See Note 7)*
		P2	CPDLC RCP 240 *(See Note 7)*
		P3	SATVOICE RCP 400 *(See Note 7)*
		P4-P9	Reserved for RCP
H	HF RTF	R	PBN approved *(See Note 4)*
I	Inertial Navigation	T	TACAN
J1	CPDLC ATN VDL Mode 2 *(See Note 3)*	U	UHF RTF
		V	VHF RTF
J2	CPDLC FANS 1/A HFDL	W	RVSM approved
		X	MNPS approved
J3	CPDLC FANS 1/A VDL Mode A	Y	VHF with 8.33 kHz channel spacing capability
J4	CPDLC FANS 1/A VDL Mode 2	Z	Other equipment carried or other capabilities *(See Note 5)*
J5	CPDLC FANS 1/A SATCOM (INMARSAT)		

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.

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 (PBN) 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.

Note 7.— Guidance material on the application of performance-based communication, which prescribes RCP to an air traffic service in a specific area, is contained in the Performance-based Communication and Surveillance (PBCS) Manual (Doc 9869).

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Surveillance equipment and capabilities

INSERT N if no surveillance equipment for the route to be flown is carried, or the equipment is unserviceable,
OR

INSERT one 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

A Transponder — Mode A (4 digits — 4 096 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 aircraft 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 aircraft identification capability
S Transponder — Mode S, including both pressure altitude and aircraft identification capability
X Transponder — Mode S with neither aircraft 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 1 090 MHz ADS-B "out" capability
B2 ADS-B with dedicated 1 090 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 4

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 1.— The RSP specification(s), if applicable, will be listed in Item 18 following the indicator SUR/. Guidance material on the application of performance-based surveillance, which prescribes RSP to an air traffic service in a specific area, is contained in the Performance-based Communication and Surveillance (PBCS) Manual *(Doc 9869).*

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Note 2.— Additional surveillance equipment or capabilities will be listed in Item 18 following the indicator SUR/, as required by the appropriate ATS authority.

ITEM 13: DEPARTURE AERODROME AND TIME (8 CHARACTERS)

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 Item 18, the name and location 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,

OR, if the flight plan is received from an aircraft in flight,

INSERT AFIL, and *SPECIFY*, in Item 18, the ICAO four-letter location indicator of the location of the ATS unit 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.

ITEM 15: ROUTE

INSERT the *first cruising speed* as in (a) and the *first cruising level* as in (b), without a space between them.

THEN, following the arrow, *INSERT* the route description as in (c).

(a) Cruising speed (maximum 5 characters)

INSERT the *True airspeed* for the first or the whole cruising portion of the flight, in terms of:

Kilometres per hour, expressed as K followed by 4 figures (e.g. K0830), *or*

Knots, expressed as N followed by 4 figures (e.g. N0485), *or*

True Mach number, when so prescribed by the appropriate ATS authority, 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*

**Standard metric level in tens of metres,* expressed as S followed by 4 figures (e.g. S1130), *or*

Altitude in hundreds of feet, expressed as A followed by 3 figures (e.g. A045; A100), *or*
Altitude in tens of metres, expressed as M followed by 4 figures (e.g. M0840), *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.

THEN

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,

Note.— When a transition is planned between a lower and upper ATS route and the routes are oriented in the same direction, the point of transition need not be inserted.

FOLLOWED IN EACH CASE

by the designator of the next ATS route segment, even if the same as the previous one,

OR by DCT, if the flight to the next point will be outside a designated route, unless both points are defined by geographical coordinates.

Flights outside designated ATS routes

INSERT points normally not more than 30 minutes flying time or 370 km (200 NM) 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, when required by appropriate ATS authority(ies),

DEFINE the track of flights operating predominantly in an east-west direction between 70°N and 70°S by reference to significant points formed by the intersections of half or whole degrees of latitude with meridians spaced at

* When so prescribed by the appropriate ATS authorities.

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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.

INSERT DCT between successive points unless both points are defined by geographical coordinates or by bearing and distance.

USE ONLY the conventions in (1) to (5) below and *SEPARATE* each sub-item by a space.

(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. BCN1, B1, R14, UB10, KODAP2A).

Note.— Provisions for the application of route designators are contained in Annex 11, Appendix 1.

(2) Significant point (2 to 11 characters)

The coded designator (2 to 5 characters) assigned to the point (e.g. LN, MAY, HADDY),

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 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.

— *Bearing and distance from a reference point*:

The identification of the reference 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 180° magnetic at a distance of 40 nautical miles from VOR "DUB" should be expressed as DUB180040.

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(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 (a) and (b) above, without a space between them, *even when only one of these quantities will be changed*.

Examples: LN/N0284A045
MAY/N0305Fl80
HADDY/N0420F330
4602N07805W/N0500F350
46N078W/M082F330
DUB180040/N0350M0840

(4) Change of flight rules (maximum 3 characters)

The point at which the change of flight rules is planned, expressed exactly as in (2) or (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: LN VFR
LN/N0284A050 IFR

(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 (a) above, followed by *the two levels defining the layer to be occupied during cruise climb*, each level expressed exactly as in (b) above, *or the level above which cruise climb is planned followed by the letters PLUS*, without a space between them.

Examples: C/48N050W/M082F290F350
C/48N050W/M082F290PLUS
C/52N050W/M220F580F620.

ITEM 16: DESTINATION AERODROME AND TOTAL ESTIMATED ELAPSED TIME, 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 Doc 7910, *Location Indicators*,

OR, if no location indicator has been assigned,

INSERT ZZZZ and *SPECIFY* in Item 18 the name and location of the aerodrome, preceded by DEST/ .

THEN WITHOUT A SPACE

INSERT the total estimated elapsed time.

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 point of the flight plan.

Destination alternate aerodrome(s)

INSERT the ICAO four-letter location 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/ .

ITEM 18: OTHER INFORMATION

Note.— Use of indicators not included under this item may result in data being rejected, processed incorrectly or lost.

Hyphens or oblique strokes should only be used as prescribed below.

INSERT 0 (zero) if no other information,

OR, any other necessary information in the sequence shown hereunder, in the form of the appropriate indicator selected from those defined hereunder followed by an oblique stroke and the information to be recorded:

STS/ Reason for special handling by ATS, e.g. a search and rescue mission, as follows:

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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
B5	RNAV 5 INS or IRS
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)

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Combinations of alphanumeric characters not indicated above are reserved.

NAV/ Significant data related to navigation equipment, other than specified in PBN/, as required by the appropriate ATS authority. Indicate GNSS augmentation under this indicator, with a space between two or more methods of augmentation, e.g. NAV/GBAS SBAS.

COM/ Indicate communication equipment and capabilities not specified in Item 10 a).

DAT/ Indicate data communication equipment and capabilities not specified in 10 a).

SUR/ Indicate surveillance equipment and capabilities not specified in Item 10 b). Indicate as many RSP specification(s) as apply to the flight, using designator(s) with no space. Multiple RSP specifications are separated by a space. Example: RSP180 RSP400.

DEP/ Name and location of departure aerodrome, if ZZZZ is inserted in Item 13, or the ATS unit 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 mark 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.

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TYP/ Type(s) of aircraft, preceded 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.

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/ ICAO designator or name of the aircraft operating agency, if different from the 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 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 four-letter location indicator of the aerodrome. The revised route is subject to reclearance in flight.

Examples: RIF/DTA HEC KLAX
RIF/ESP G94 CLA YPPH

RMK/ Any other plain-language remarks when required by the appropriate ATS authority or deemed necessary.

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, when required by the appropriate ATS authority. *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 locator transmitter (ELT) 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 of pilot-in-command.

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2.3 Filed by

INSERT the name of the unit, agency or person filing the flight plan.

2.4 Acceptance of the flight plan

Indicate acceptance of the flight plan in the manner prescribed by the appropriate ATS authority.

2.5 Instructions for insertion of COM data

Items to be completed

COMPLETE the top two shaded lines of the form, and *COMPLETE* the third shaded line only when necessary, in accordance with the provisions in PANS-ATM, Chapter 11, 11.2.1.2, unless ATS prescribes otherwise.

3. Instructions for the transmission of a filed flight plan (FPL) message

Correction of obvious errors

Unless otherwise prescribed, *CORRECT* obvious format errors and/or omissions (i.e. oblique strokes) to ensure adherence as specified in Section 2.

Items to be transmitted

TRANSMIT items as indicated hereunder, unless otherwise prescribed:

a) the items in the shaded lines, above Item 3;

b) commencing with <<≡ (FPL of Item 3:

all symbols and data in the unshaded boxes down to the)<<≡ at the end of Item 18,

additional alignment functions as necessary to prevent the inclusion of more than 69 characters in any line of Items 15 or 18. The alignment function is to be inserted only in lieu of a space so as not to break up a group of data,

letter shifts and figure shifts (not preprinted on the form) as necessary;

c) the AFTN Ending, as described below:

End-of-Text Signal

a) one LETTER SHIFT

b) two CARRIAGE RETURNS, one LINE FEED

Page-feed Sequence

Seven LINE FEEDS

End-of-Message Signal

Four of the letter N.

4. Instructions for the transmission of a supplementary flight plan (SPL) message

Items to be transmitted

Transmit items as indicated hereunder, unless otherwise prescribed:

a) AFTN Priority Indicator, Addressee Indicators <<≡, Filing Time, Originator Indicator <<≡ and, if necessary, specific identification of addressees and/or originator;

b) commencing with <<≡ (SPL:

all symbols and data in the unshaded areas of boxes 7, 13, 16 and 18, except that the ')' at the end of box 18 is *not* to be transmitted, and then the symbols in the unshaded area of box 19 down to and including the)<<≡ of box 19,

additional alignment functions as necessary to prevent the inclusion of more than 69 characters in any line of Items 18 and 19. The alignment function is to be inserted only in lieu of a space so as not to break up a group of data,

letter shifts and figure shifts (not preprinted on the form) as necessary;

c) the AFTN Ending, as described below:

End-of-Text Signal

a) one LETTER SHIFT

b) two CARRIAGE RETURNS, one LINE FEED

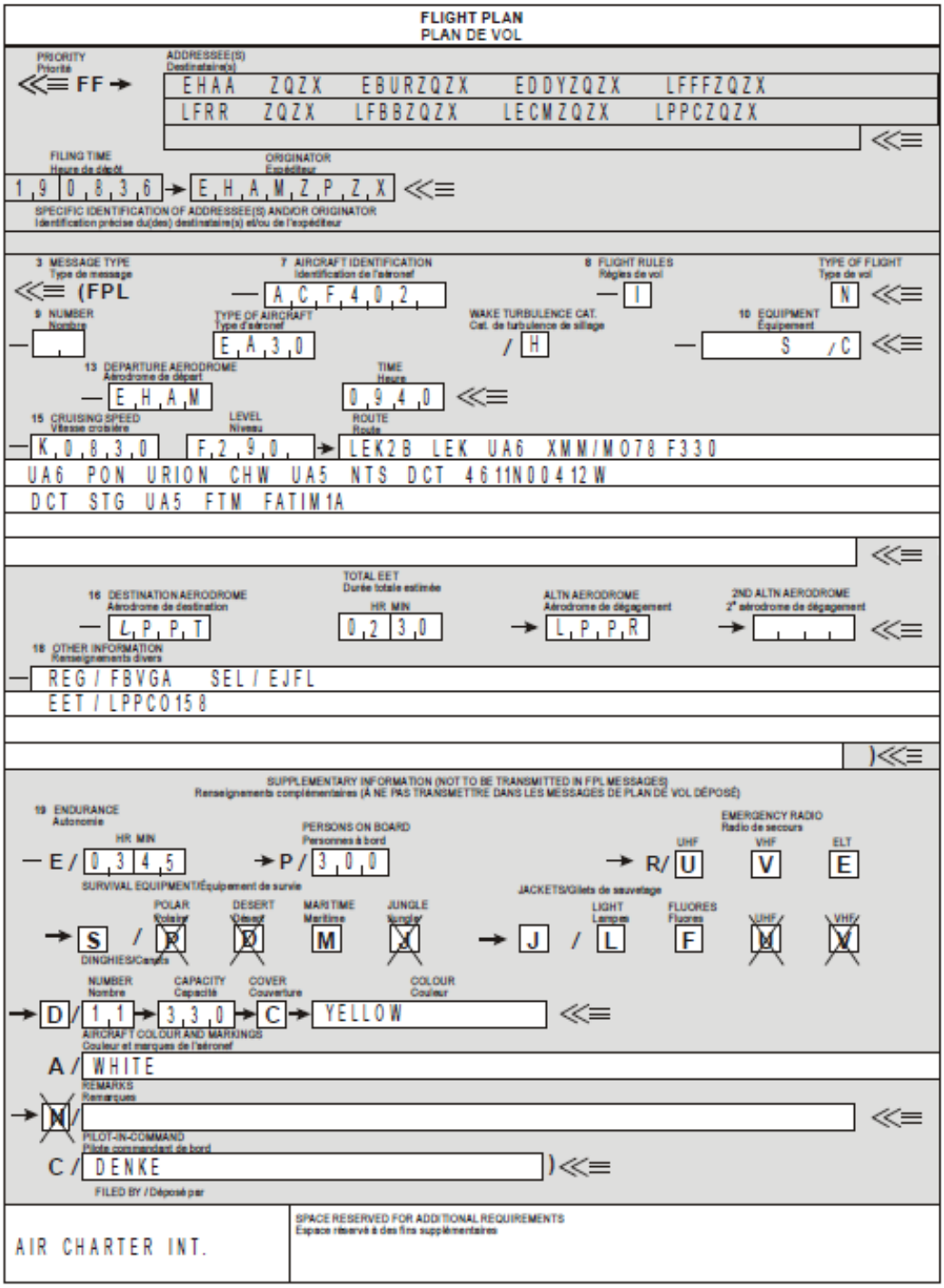
Page-feed Sequence

Seven LINE FEEDS

End-of-Message Signal

Four of the letter N.

5. Example of a completed flight plan form



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REPETITIVE FLIGHT PLAN LISTING

A OPERATOR	B ADDRESSEE(S)	C DEPARTURE AERODROME(S)	D DATE ------- yymmdd	E SERIAL NO. --/--	F PAGE OF --/--
			G SUPPLEMENTARY DATA (Item 19) AT:		

H	I	J	K							L	M	N	O			P		Q
	VALID FROM	VALID UNTIL	DAYS OF OPERATION							AIRCRAFT IDENTIFI-CATION (Item 7)	TYPE OF AIRCRAFT AND WAKE TURBULENCE CATEGORY (Item 9)	DEPARTURE AERODROME AND TIME (Item 13)	ROUTE (Item 15)			DESTINATION AERODROME AND TOTAL ESTIMATED ELAPSED TIME (Item 16)		
+ –	yymmdd	yymmdd	1	2	3	4	5	6	7				CRUISING SPEED	LEVEL	ROUTE			REMARKS

6. ICAO model repetitive flight plan (RPL) listing form

7. Instructions for the completion of the repetitive flight plan (RPL) listing form

7.1 General

List only flight plans that will operate in accordance with IFR. (Flight rules I in FPL format).

It is assumed that all aircraft are operating as scheduled flights (Type of flight S in FPL format), otherwise *notify* in Q (Remarks).

It is assumed that all aircraft operating on RPLs are equipped with 4 096-code transponders with Modes A and C. Otherwise, *notify* in Q (Remarks).

List flight plans in *alphabetical order of the location indicator of the departure aerodrome*.

List flight plans for each departure aerodrome in chronological order of estimated off-block times.

Adhere closely to the data conventions as indicated for the Flight Plan Form (Appendix 3, 1.6) unless otherwise specifically indicated in 7.4.

Insert all clock times in 4 figures UTC.

Insert all estimated elapsed times in 4 figures (hours and minutes).

Insert data on a separate line for each segment of operations with one or more stops, i.e. from any departure aerodrome to the next destination aerodrome even though call sign or flight number is the same for multiple segments.

Clearly identify additions and deletions in accordance with Item H at 7.4. Subsequent listings shall list the corrected and added data, and deleted flight plans shall be omitted.

Number pages by indicating number of page and total number of pages in submission.

Utilize more than one line for any RPL where the space provided for items O and Q on one line is not sufficient.

7.2 A flight shall be cancelled as follows:

a) indicate a minus sign in Item H followed by all other items of the cancelled flight;

b) insert a subsequent entry denoted by a plus sign in Item H and the date of the last flight in Item J, with all other items of the cancelled flight unchanged.

7.3 Modification to a flight shall be made as follows:

a) carry out the cancellation as indicated in 7.2; and

b) insert a third entry giving the new flight plan(s) with the appropriate items modified as necessary, including the new validity dates in Items I and J.

Note.— All entries related to the same flight will be inserted in succession in the order specified above.

7.4 Instructions for insertion of RPL data

Complete Items A to Q as indicated hereunder.

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ITEM A: OPERATOR

INSERT name of operator.

ITEM B: ADDRESSEE(S)

INSERT name of agency(ies) designated by States to administer RPLs for FIRs or areas of responsibility concerned with the route of flight.

ITEM C: DEPARTURE AERODROME(S)

INSERT location indicator(s) of departure aerodrome(s).

ITEM D: DATE

INSERT on each page of submission the date (year, month, day) in a 6-figure group that the listing was submitted.

ITEM E: SERIAL NO.

INSERT serial number of submission (2 numerics) indicating last two digits of year, a dash, and the sequential no. of the submission for the year indicated (start with numeral 1 each new year).

ITEM F: PAGE OF

INSERT page number and total number of pages submitted.

ITEM G: SUPPLEMENTARY DATA AT

INSERT name and appropriate contact details of entity where information normally provided under Item 19 of the FPL is kept readily available and can be supplied without delay.

ITEM H: ENTRY TYPE

INSERT a minus sign (–) for each flight plan that is to be deleted from the listing.

INSERT a plus sign (+) for each initial listing and, in the case of subsequent submissions, for each flight plan not listed in the previous submission.

Note.— No information is required under this item for any flight plan which is unchanged from the previous submission.

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ITEM I: VALID FROM

INSERT first date (year, month, day) upon which the flight is scheduled to operate.

ITEM J: VALID UNTIL

INSERT last date (year, month, day) upon which the flight is scheduled to operate as listed, or

UFN if the duration is unknown.

ITEM K: DAYS OF OPERATION

INSERT number corresponding to the day of the week in the appropriate column;
Monday = 1 through Sunday = 7.

INSERT 0 for each day of non-operation in the appropriate column.

ITEM L: AIRCRAFT IDENTIFICATION

(Item 7 of the ICAO flight plan)

INSERT aircraft identification to be used for the flight.

ITEM M: TYPE OF AIRCRAFT AND WAKE TURBULENCE CATEGORY

(Item 9 of the ICAO flight plan)

INSERT appropriate ICAO designator as specified in Doc 8643 — *Aircraft Type Designators*.

INSERT J, H, M or L indicator as appropriate:

J — SUPER, to indicate an aircraft type specified as such in Doc 8643, *Aircraft Type Designators*;

H — HEAVY to indicate an aircraft type with a maximum certificated take-off mass of 136 000 kg or more, with the exception of aircraft types listed in Doc 8643 in the SUPER (J) category;

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.

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ITEM N: DEPARTURE AERODROME AND TIME

(Item 13 of the ICAO flight plan)

INSERT location indicator of the departure aerodrome.

INSERT the off-block time, i.e. the estimated time that the aircraft will commence movement associated with departure.

ITEM O: ROUTE

(Item 15 of the ICAO flight plan)

(a) Cruising speed

INSERT the true airspeed for the first or whole cruising portion of the flight in accordance with Item 15 (a) of the ICAO flight plan.

(b) Cruising level

INSERT the planned cruising level for the first or whole portion of the route in accordance with Item 15 (b) of the ICAO flight plan.

(c) Route

INSERT the entire route in accordance with Item 15 (c) of the ICAO flight plan.

ITEM P: DESTINATION AERODROME AND TOTAL ESTIMATED ELAPSED TIME

(Item 16 of the ICAO flight plan)

INSERT location indicator of the destination aerodrome.

INSERT the total estimated elapsed time.

ITEM Q: REMARKS

INSERT items of information as required by the appropriate ATS authority, items normally notified in Item 18 of the ICAO flight plan and any other information pertinent to the flight of concern to ATS.

Appendix 2

8. Example of a completed repetitive flight plan (RPL) listing form

REPETITIVE FLIGHT PLAN LISTING

A OPERATOR	B ADDRESSEE(S)	C DEPARTURE AERODROME(S)	D	E	F
BRITISH AIRWAYS	UK STORED FLIGHT PLAN OFFICE EGTXEBZX Chef de la Subdivision informatique 9 rue de Champagne 91205 Athismons France	EGLL	DATE 800305 ------- yymmdd	SERIAL NO. 80 - 12 -- --	PAGE OF 3 / 3 --/--
			G SUPPLEMENTARY DATA (Item 19) AT: BAW Briefing Office		

H	I	J	K							L	M		N		O			P	Q
+ –	VALID FROM	VALID UNTIL	DAYS OF OPERATION							AIRCRAFT IDENTIFI-CATION (Item 7)	TYPE OF AIRCRAFT AND WAKE TURBULENCE CATEGORY (Item 9)		DEPARTURE AERODROME AND TIME (Item 13)		CRUISING		ROUTE (Item 15)	DESTINATION AERODROME AND TOTAL ESTIMATED ELAPSED TIME (Item 16)	
	yymmdd	yymmdd	1	2	3	4	5	6	7						SPEED	LEVEL	ROUTE		REMARKS
+	800401	811031	1	2	3	4	5	6	7	BAW004	H521	M	EGLL	0700	N0440	F210	A1E UA1E DPE UA16 MAN	LFPG	0045
+	800401	800731	1	2	3	4	5	6	7	BAW032	H521	M	EGLL	1800	N0440	F210	A1E UA1E DPE UA16 MAN	LFPG	0045
+	800801	811031	1	0	3	0	5	0	7	BAW032	H521	M	EGLL	1800	N0440	F210	A1E UA1E DPE UA16 MAN	LFPG	0045
+	800601	800930	0	0	0	0	0	0	7	BAW082	H521	M	EGLL	1805	N0450	F270	A1S UA1S RBT UA3 MTL		
																	UA3W STP DCT GL	LFMN	0130
–	800103	800930	0	0	0	0	0	6	7	BAW092	B737	M	EGLL	1810	N0430	F190	A1E UA1E DPE UA16 MAN	LFPG	0400	CHARTERED ACFT
+	800103	800315	0	0	0	0	0	6	7	BAW092	B737	M	EGLL	1810	N0430	F190	A1E UA1E DPE UA16 MAN	LFPG	0400	CHARTERED ACFT

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APPENDIX 7: AIR TRAFFIC SERVICES MESSAGES

1. Message contents, formats and data conventions
2. Examples of ATS messages

1. Message contents, formats and data conventions

Note.— To facilitate description of the content and format of air traffic services messages, both for interchange between units without automatic data processing equipment and for interchange between air traffic control computers, the elements of data to be included in the message are grouped into "fields". Each field contains a single element or a group of related elements.

1.1 The standard types of message

The standard types of message established for the interchange of ATS data, together with the associated message type designators, are as follows:

Message category	*Message type*	*Message type designator*
Emergency	Alerting	ALR
	Radiocommunication failure	RCF
Filed flight plan and associated update	Filed flight plan	FPL
	Modification	CHG
	Cancellation	CNL
	Delay	DLA
	Departure	DEP
	Arrival	ARR
Coordination	Current flight plan	CPL
	Estimate	EST
	Coordination	CDN
	Acceptance	ACP
	Logical acknowledgement	LAM
Supplementary	Request flight plan	RQP
	Request supplementary flight plan	RQS
	Supplementary flight plan	SPL

1.2 The standard types of field

The standard fields of data permitted in ATS messages are as shown in the following table. The numbers in column 1 correspond with those in the reference table on page A3-35.

Field type	*Data*
3	Message type, number and reference data
5	Description of emergency
7	Aircraft identification and SSR mode and code
8	Flight rules and type of flight
9	Number and type of aircraft and wake turbulence category
10	Equipment and capabilities
13	Departure aerodrome and time
14	Estimate data

APPENDIX 8 AIR TRAFFIC INCIDENT REPORT

1 Air traffic incident report form

2 Instructions for the completion of the air traffic incident report form

1 Air traffic incident report form

For use when submitting and receiving reports on air traffic incidents. In an initial report by radio, shaded items shall be included.

A - AIRCRAFT IDENTIFICATION	B - TYPE OF INCIDENT
	AIRPROX / PROCEDURE / FACILITY*

C - THE INCIDENT

1. General

a) Date / time of incident UTC

b) Position

2. Own aircraft

a) Heading and route

b) True airspeed measured in ☐ kt ☐ km/h

c) Level and altimeter setting /

d) Aircraft climbing or descending

☐ Level flight ☐ Climbing ☐ Descending

e) Aircraft bank angle

☐ Wings level ☐ Slight bank ☐ Moderate bank
☐ Steep bank ☐ Inverted ☐ Unknown

f) Aircraft direction of bank

☐ Left ☐ Right ☐ Unknown

g) Restrictions to visibility (select as many as required)

☐ Sunglare ☐ Windscreen pillar ☐ Dirty windscreen
☐ Other cockpit structure ☐ None

h) Use of aircraft lighting (select as many as required)

☐ Navigation lights ☐ Strobe lights ☐ Cabin lights
☐ Red anti-collision lights ☐ Landing / taxi lights ☐ Logo (tail fin) lights
☐ Other ☐ None

i) Traffic avoidance advice issued by ATS

☐ Yes, based on radar ☐ Yes, based on visual sighting ☐ Yes, based on other information
☐ No

j) Traffic information issued

☐ Yes, based on radar ☐ Yes, based on visual sighting ☐ Yes, based on other information
☐ No

k) Airborne collision avoidance system - ACAS

☐ Not carried ☐ Type ☐ Traffic advisory issued
☐ Resolution advisory issued ☐ Traffic advisory or resolution advisory not issued

l) Radar identification
☐ No radar available ☐ Radar identification ☐ No radar identification

m) Other aircraft sighted
☐ Yes ☐ No ☐ Wrong aircraft sighted

n) Avoiding action taken
☐ Yes ☐ No

o) Type of flight plan
☐ IFR ☐ VFR ☐ none*

3. Other aircraft

a) Type and call sign / registration (if known)

b) If a) above not known, describe below
☐ High wing ☐ Mid wing ☐ Low wing
☐ Rotorcraft
☐ 1 engine ☐ 2 engines ☐ 3 engines
☐ 4 engines ☐ More than 4 engines

Making, colour or other available details

c) Aircraft climbing or descending
☐ Level flight ☐ Climbing ☐ Descending
☐ Unknown

d) Aircraft bank angle
☐ Wings level ☐ Slight bank ☐ Moderate bank
☐ Steep bank ☐ Inverted ☐ Unknown

e) Aircraft direction of bank
☐ Left ☐ Right ☐ Unknown

f) Lights displayed
☐ Navigation lights ☐ Strobe lights ☐ Cabin lights
☐ Red anti-collision lights ☐ Landing / taxi lights ☐ Logo (tail fin) lights
☐ Other ☐ None ☐ Unknown

g) Traffic avoidance advice issued by ATS
☐ Yes, based on radar ☐ Yes, based on visual sighting ☐ Yes, based on other information
☐ No ☐ Unknown

h) Traffic information issued
☐ Yes, based on radar ☐ Yes, based on visual sighting ☐ Yes, based on other information
☐ No ☐ Unknown

l) Avoiding action taken
☐ Yes ☐ No ☐ Unknown

4.	**Distance**
a)	Closest horizontal distance
b)	Closest vertical distance

5.	**Flight weather conditions**
a)	☐ IMC / ☐ VMC*
b)	☐ Above / ☐ below* clouds ☐ fog ☐ haze or ☐ between layers*
c)	Distance vertically from cloud m / ft* below m / ft* above
d)	☐ In cloud ☐ rain ☐ snow ☐ sleet ☐ fog ☐ haze*
e)	Flying ☐ into ☐ out of* sun
f)	Flight visibility m / km*

6.	**Any other information considered important by the pilot-in-command**

D – MISCELLANEOUS

1.	**Information regarding reporting aircraft**
a)	Aircraft registration
b)	Aircraft type
c)	Operator
d)	Aerodrome of departure
e)	Aerodrome of first landing Destination
f)	Reported by radio or other means to (name of ATS unit) at time UTC
g)	Date / time / place of completion of form

2.	**Function, address and signature of person submitting report**
a)	Function
b)	Address
c)	Signature
d)	Telephone number

3.	**Function and signature of person receiving report**
a)	Function b) Signature

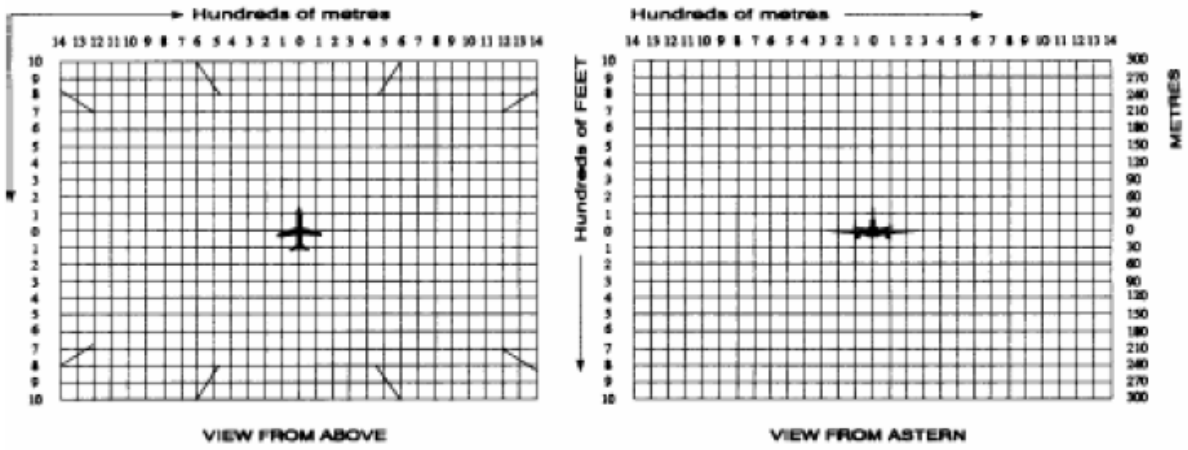
E - SUPPLEMENTARY INFORMATION BY ATS UNIT CONCERNED

1.	**Receipt of report**
a)	Report received via AFTN / radio / telephone / other (specify)*
b)	Report received by (name of ATS unit)

2.	**Details of ATS action**
Clearance, incident seen (radar/visually, warning given, result of local enquiry, etc)	

DIAGRAMS OF AIRPROX

Mark passage of other aircraft relative to you, in plan on the left and in elevation on the right, assuming you are at the centre of each diagram. Include first sight and passing distance.



Instructions for the completion of the Air Traffic Incident Report Form

Item

A. Aircraft identification of the aircraft filing the report.

B. An AIRPROX report should be filed immediately by radio.

C1. Date/Time UTC and position in bearing and distance form a navigation aid or in LAT/LONG

C2. C.E.g. FL350/1013 hPa or 2500 ft/qnh1007 hPa or 102ft/QFE998hPa.

C3. Information regarding the other aircraft involved.

C4. Passing distance – state units used.

C6. Attach additional papers as required. The diagrams may be used to show aircraft's positions.

D1. f. State the name of ATS unit and date/time in UTC.

D1. g. Date and time in UTC

E2 Include details of ATS unit such as service provided, radiotelephony frequency SSR Codes assigned and altimeter setting. Use diagram to show the aircraft's position and attach additional papers as necessary.