PERATURAN MENTERI PERHUBUNGAN

NOMOR: KM 14 TAHUN 2009

TENTANG

PERATURAN KESELAMATAN PENERBANGAN SIPIL BAGIAN 170
(CIVIL AVIATION SAFETY REGULATIONS PART 170)
TENTANG PERATURAN LALU LINTAS UDARA
(AIR TRAFFIC RULES)

DENCAN RAHMAT TUHAH YANG MAHA ESA

MENTERI PERHUBUNGAN,

Menimbang : a. bahwa di dalam Peraturan Pemerintah Nomor 3 Tahun 2001 tentang Keamanan dan Keselamatan Penerbangan diatur mengenai Lalu Lintas Udara;

b. bahwa dengan meningkatnya kebutuhan dan perkembangan teknologi dan menjamin kesiapan standar-standar pelaksanaan serta mengantisipasi perkembangan yang terjadi dalam bidang penerbangan perlu dilakukan kesiapan aturan tersendiri;

c. bahwa berdasarkan pertimbangan sebagaimana dimaksud dalam huruf a dan b, perlu menetapkan Peraturan Keselamatan Penerbangan Sipil Bagian 170 (Civil Aviation Safety Regulations Part 170) tentang Peraturan Lalu Lintas Udara (Air Traffic Rules) dengan Peraturan Menteri Pernhubungan:

Mengingat : 1. Undang-Undang Nomor 1 Tahun 2009 tentang Penerbangan (Lembaran Negara Republik Indonesia Tahun 2009 Nomor 7, Lembaran Negara Republik Indonesia Nomor 4956);

2. Peraturan Pemerintah Nomor 3 Tahun 2001 tentang Keamanan dan Keselamatan Penerbangan (Lembaran Negara Republik Indonesia Tahun 2001 Nomor 9, Lembaran Negara Republik Indonesia Nomor 4075);

4. Peraturan Presiden Nomor 10 Tahun 2005 tentang Unit Organisasi dan Tugas Eselon I Kementerian Negara Republik Indonesia sebagaimana telah diubah terakhir dengan Peraturan Presiden Nomor 21 Tahun 2008;


MEMUTUSKAN:

Menetapkan: PERATURAN MENTERI PERHUBUNGAN TENTANG PERATURAN KESELAMATAN PENERBANGAN SIPIL BAGIAN 170 (CIVIL AVIATION SAFETY REGULATIONS PART 170) TENTANG PERATURAN LALU LINTAS UDARA (AIR TRAFFIC RULES).

Pasal 1


(2) Peraturan Keselamatan Penerbangan Sipil Bagian 170 (Civil Aviation Safety Regulations Part 170) tentang Peraturan Lalu Lintas Udara (Air Traffic Rules) sebagaimana terlampir dan merupakan bagian yang tidak terpisahkan dari Peraturan Menteri ini.

Pasal 2

Pasal 3
Direktur Jenderal Perhubungan Udara mengawasi pelaksanaan Peraturan ini.

Pasal 4
Peraturan ini mulai berlaku pada tanggal ditetapkan.

Ditetapkan di : Jakarta
Pada tanggal : 16 Februari 2009

MENTERI PERHUBUNGAN

ttd

Ir. JUSMAN SYAFII DJAMAL

SALINAN Peraturan ini disampaikan kepada:
1. Menteri Koordinator Bidang Politik, Hukum, dan Keamanan;
2. Menteri Dalam Negeri;
3. Menteri Pertahanan;
4. Sekretaris Jenderal, Inspektur Jenderal, Direktur Jenderal Perhubungan Udara, dan Para Kepala Badan di lingkungan Departemen Perhubungan;
5. Ketua KNKT;
6. DPP INACA.

Salinan sesuai dengan aslinya
Kepala Biro Hukum dan KSLN

[Signature]

UMAR ARIS, SH, MM, MH
Pembina TKI (IV/b)
CIVIL AVIATION SAFETY REGULATION (C.A.S.R.)

PART 170

AIR TRAFFIC RULES

REPUBLIC OF INDONESIA MINISTRY OF TRANSPORTATION
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DEFINITIONS

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

Accident. An occurrence associated with the operation of an aircraft which takes place between the time any person boards the aircraft with the intention of flight until such time as all such persons have disembarked, in which:

a) a person isfatally 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 the engine, its cowlings or accessories; or for damage limited to propellers, wing tips, antennas, tires, brakes, fairings, small dents or puncture holes in the aircraft skin; or

c) the aircraft is missing or is completely inaccessible.

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

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).

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 traffic.** All traffic on the manoeuvring area of an aerodrome and all aircraft flying 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 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 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.

**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.

**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 kt).

**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.

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

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

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

**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.

**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. Alternate aerodromes include the following:

*Take-off alternate.* An alternate aerodrome at which an aircraft can land should this become necessary shortly after take-off and it is not possible to use the aerodrome of departure.
En-route alternate. An aerodrome at which an aircraft would be able to land after experiencing an abnormal or emergency condition while en route.

ETOPS en-route alternate. A suitable and appropriate alternate aerodrome at which an aeroplane would be able to land after experiencing an engine shutdown or other abnormal or emergency condition while en route in an ETOPS operation.

Destination alternate. An alternate aerodrome to which an aircraft may proceed should it become either impossible or inadvisable to land at the aerodrome of intended landing.

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.

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 station-referenced navigation aids or within the limits of the capability of self-contained aids, or a combination of these.

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

ATS route. A specified route designed for channelling the flow of traffic as necessary for the provision of air traffic services.

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.

**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.

**Calendar.** Discrete temporal reference system that provides the basis for defining temporal position to a resolution of one day (ISO 19108*).

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

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

**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.

**Controlled airspace.** An airspace of defined dimensions within which air traffic control service is provided in accordance with the airspace classification.

**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.

**Cruising level.** A level maintained during a significant portion of a flight.

**Cyclic redundancy check (CRC).** A mathematical algorithm applied to the digital expression of data that provides a level of assurance against loss or alteration of data.
Data link communications. A form of communication intended for the exchange of messages via a data link.

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.

Datum. Any quantity or set of quantities that may serve as a reference or basis for the calculation of other quantities (ISO 19104*).

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.

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. * All ISO Standards are listed at the end of this chapter,

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

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

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.

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. 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, 1013.2 hectopascals (hPa), and is separated from other such surfaces by specific pressure intervals.

**Flight plan.** Specified information provided to air traffic services units, relative to an intended flight or portion of a flight of an aircraft.

**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.

**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 (ISO 19108*).

**Height.** The vertical distance of a level, a point or an object considered as a point, measured from a specified datum.

**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.

**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.

**Integrity (aeronautical data).** A degree of assurance that an aeronautical data and its value has not been lost nor altered since the data origination or authorized amendment.

**International NOTAM office.** An office designated by a State 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.
Manoeuvring 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.

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

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 are located on an area intended for the surface movement of aircraft or that extend above a defined surface intended to protect aircraft in flight.

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

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.

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

Radiotelephony. A form of radiocommunication primarily intended for the exchange of information in the form of speech.

RCP type. A label (e.g. RCP 240) that represents the values assigned to RCP parameters for communication transaction time, continuity, availability and integrity.

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

Required communication performance (RCP). A statement of the performance requirements for operational communication in support of specific ATM functions.

Required navigation performance (RNP). A statement of the navigation performance necessary for operation within a defined airspace.

Rescue coordination centre. 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.

RNP type. A containment value expressed as a distance in nautical miles from the intended position within which flights would be for at least 95 per cent of the total flying time.
Example.— RNP 4 represents a navigation accuracy of plus or minus 7.4 km (4 NM) on a 95 per cent containment basis.

**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 programme.** An integrated set of regulations and activities aimed at improving safety.

**Safety management system.** A systematic approach to managing safety, including the necessary organizational structures, accountabilities, policies and procedures.

**SIGMET 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 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.

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

**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.

**Terminal control area.** A control area normally established at the confluence of ATS routes in the vicinity of one or more major aerodromes.

**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. The 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.

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:
a) Fly-by waypoint. A waypoint which requires turn anticipation to allow tangential interception of the next segment of a route or procedure, or
b) Flyover waypoint. A waypoint at which a turn is initiated in order to join the next segment of a route or procedure.
Sub Part 170.A - General

170.001 Establishment of Authority

1) DGCA determines, in accordance with the provisions of this Part and for the territories over which they have jurisdiction, those portions of the airspace and those aerodromes where air traffic services will be provided. DGCA arrange for such services to be established and provided in accordance with the provisions of this Part, except that, by mutual agreement, a State may delegate to another State the responsibility for establishing and providing air traffic services in flight information regions, control areas or control zones extending over the territories of the former.

2) Those portions of the airspace over the high seas or in airspace of undetermined sovereignty where air traffic services will be provided shall be determined on the basis of regional air navigation agreements. DGCA having accepted the responsibility to provide air traffic services in such portions of airspace shall thereafter arrange for the services to be established and provided in accordance with the provisions of this Part.

3) When it has been determined that air traffic services will be provided, DGCA designate or delegate the authority responsible for providing such services.

170.002 Objectives of Air Traffic Services

The objectives of air traffic services shall be to:

1) prevent collisions between aircraft;

2) prevent collisions between aircraft on the manoeuvring area and obstruction on that area;

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

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

5) notify appropriate organizations regarding aircraft in need of search and rescue aid and assist such organizations as required.

170.003 Division of air traffic services

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

a) The air traffic control services, to accomplish objectives (1), (2) and (3) of paragraph 170.002, this service being divided in three parts as follows:
(i) area control service: the provision of air traffic control service for controlled flight, except for those parts of such flights described in (a) (ii) and (iii), in order to accomplish objectives (1) and (3) of paragraph 170.003;

(ii) approach control service: the provision of air traffic control service for those parts of controlled flights associated with arrival and departure, in order to accomplish objectives (1) and (3) of paragraph 170.003;

(iii) aerodrome control service: the provision of air traffic control service for aerodrome traffic, except for those parts of flight described (a) (ii), in order to accomplish objectives (1), (2) and (3) of paragraph 170.003

(b) The flight information service, to accomplish objective (4) of paragraph 170.003.

(c) The alerting service, to accomplish objective (5) of paragraph 170.003.

170.004 Determination of the need for air traffic services

1) The need for the provision of air traffic services shall be determined by consideration of the following:

a) the types of air traffic involved;

b) the density of air traffic;

b) the meteorological conditions;

c) such other factors as may be relevant.

2) The carriage of airborne collision avoidance systems (ACAS) by aircraft in a given area shall not be a factor in determining the need for air traffic services in that area.

170.005 Designation of the portions of the airspace and controlled aerodromes where air traffic services will be provided

1) When it has been determined that air traffic services will be provided in particular portions of the airspace or at particular aerodromes, then those portions of the airspace or those aerodromes is designated in relation to the air traffic services that are to be provided.

2) The designation of the particular portions of the airspace or the particular aerodromes is as follows:
a) **Flight information regions.** Those portions of the airspace where it is determined that flight information service and alerting service will be provided is designated as flight information regions.

b) **Control areas and control zones.** Those portions of the airspace where it is determined that air traffic control service will be provided to IFR flights is designated as control areas or control zones.

   (i) Those portions of controlled airspace wherein it is determined that air traffic control service will also be provided to VFR flights is designated as Classes B, C or D airspace.

   (ii) Where designated within a flight information region, control areas and control zones form part of that flight information region.

c) **Controlled aerodromes.** Those aerodromes where it is determined that air traffic control service will be provided to aerodrome traffic is designated as controlled aerodromes.

170.006 **Classification of airspaces**

1) ATS airspaces is classified and designated in accordance with the following:

   a) **Class A.** IFR flights only are permitted, all flights are provided with air traffic control service and are separated from each other.

   b) **Class B.** IFR and VFR flights are permitted, all flights are provided with air traffic control service and are separated from each other.

   c) **Class C.** IFR and VFR flights are permitted, all flights are provided with air traffic control service and IFR flights are separated from other IFR flights and from VFR flights. VFR flights are separated from IFR flights and receive traffic information in respect of other VFR flights.

   d) **Class D.** IFR and VFR flights are permitted and all flights are provided with air traffic control service, IFR flights are separated from other IFR flights and receive traffic information in respect of VFR flights, VFR flights receive traffic information in respect of all other flights.

   e) **Class E.** IFR and VFR flights are permitted, IFR flights are provided with air traffic control service and are separated from other IFR flights. All flights receive traffic information as far as is practical. Class E shall not be used for control zones.
f) Class F. IFR and VFR flights are permitted, all participating IFR flights receive an air traffic advisory service and all flights receive flight information service if requested.

g) Class G. IFR and VFR flights are permitted and receive flight information service if requested.

2) The requirements for flights within each class of airspace is shown in table in Appendix 4.

170.007 Required navigation performance (RNP) for en-route operations

1) DGCA prescribed RNP types for designated areas, tracks or ATS route on basis of regional air navigation agreements.

2) The prescribed RNP types shall be appropriate to the level communications, navigation and air traffic services provided in the airspace concerned.

170.008 Required communication performance (RCP)

1) DGCA prescribed RCP types on the basis of regional air navigation agreements.

2) The prescribed RCP type shall be appropriate to the air traffic services provided in the airspace concerned.

170.009 Establishment and designation of the units providing air traffic services

The air traffic services shall be provided by units established and designated as follows:

1) Flight information centres is established to provide flight information service and alerting service within flight information regions, unless the responsibility of providing such services within a flight information region is assigned to an air traffic control unit having adequate facilities for the discharge of such responsibility.

2) Air traffic control units is established to provide air traffic control service, flight information service and alerting service within control areas, control zones and at controlled aerodromes.

170.010 Specification for flight information regions, control areas and control zones

1) Flight information regions

a) Flight information regions are delineated to cover the whole of the air route structure to be served by such regions.
b) A flight information region includes all airspace within its lateral limits, except as limited by an upper flight information region.

c) Where a flight information region is limited by an upper flight information region, the lower limit specified for the upper flight information region constitutes the upper vertical limit of the flight information region and coincides with a VFR cruising level of the tables in Appendix 3 to ICAO Annex 2 (CASK 91.159).

2) Control areas

a) Control areas including, *inter alia*, airways and terminal control areas is delineated so as to encompass sufficient airspace to contain the flight paths of those IFR flights or portions thereof to which it is desired to provide the applicable parts of the air traffic control service, taking into account the capabilities of the navigation aids normally used in that area.

b) A lower limit of a control area is established at a height above the ground or water of not less than 200 m (700 ft).

c) An upper limit of a control area is established when either:

(i) air traffic control service will not be provided above such upper limit; or

(ii) the control area is situated below an upper control area, in which case the upper limit coincides with the lower limit of the upper control area.

When established, such upper limit shall coincide with a VFR cruising level of the tables in Appendix 3 to ICAO Annex 2 (CASK 91.159).

3) Flight information regions or control areas in the upper airspace

Where it is desirable to limit the number of flight information regions or control areas through which high flying aircraft would otherwise have to operate, a flight information region or control area, as appropriate, should be delineated to include the upper airspace within the lateral limits of a number of lower flight information regions or control areas.

4) Control zones

a) The lateral limits of control zones encompass at least those portions of the airspace, which are not within control areas, containing the paths of IFR flights arriving at and departing from aerodromes to be used under instrument meteorological conditions. Aircraft holding in the vicinity of aerodromes are considered as arriving aircraft.
b) The lateral limits of a control zone extend to at least 9.3 km (5 NM) from the centre of the aerodrome or aerodromes concerned in the directions from which approaches may be made. A control zone may include two or more aerodromes situated close together.

c) If a control zone is located within the lateral limits of a control area, it shall extend upwards from the surface of the earth to at least the lower limit of the control area. An upper limit higher than the lower limit of the overlying control area may be established when desired.

d) If a control zone is located outside of the lateral limits of a control area, an upper limit should be established.

e) If it is desired to establish the upper limit of a control zone at a level higher than the lower limit of the control area established above it, or if the control zone is located outside of the lateral limits of a control area, its upper limit should be established at a level which can easily be identified by pilots. When this limit is above 900 m (3,000 ft) MSL it should coincide with a VFR cruising level of the tables in Appendix 3 to ICAO Annex 2. This implies that, if used, the selected VFR cruising level be such that expected local atmospheric pressure variations do not result in a lowering of this limit to a height of less than 200 m (700 ft) above ground or water.

170.011 Identification of air traffic services units and airspaces

1) An area control centre or flight information centre is identified by the name of a nearby town or city or geographic feature.

2) An aerodrome control tower or approach control unit is identified by the name of the aerodrome at which it is located.

3) A control zone, control area or flight information region is identified by the name of the unit having jurisdiction over such airspace.

170.012 Establishment and identification of ATS routes

1) When ATS routes are established, a protected airspace along each ATS route and a safe spacing between adjacent ATS routes shall be provided.

2) When warranted by density, complexity or nature of the traffic, special routes, DGCA may establish for use by low-level traffic, including helicopters operating to and from helidecks on the high seas. When determining the lateral spacing between such routes, account should be taken of the navigational means available and the navigation equipment carried on board helicopters.

3) ATS routes are identified by designators.
4) Designators for ATS routes other than standard departure and arrival routes shall be selected in accordance with the principles set forth in Appendix 1.

5) Standard departure and arrival routes and associated procedures shall be identified in accordance with the principles set forth in Appendix 3.
   a) Guidance material relating to the establishment of ATS routes defined by VOR is contained in Attachment A.
   b) The spacing between parallel tracks or between parallel ATS route centre lines for which an RNP type is required will be dependent upon the relevant RNP type specified. Guidance material relating to the establishment of ATS routes for use by RNAV-equipped aircraft and to the spacing between routes based on RNP type is contained in Attachment B.

170.013 Establishment of change-over points

1) DGCA may establish change-over points on ATS route segments defined by reference to very high frequency omni-directional radio ranges where this will assist accurate navigation along the route segments. The establishment of change-over points is limited to route segments of 110 km (60 NM) or more, except where the complexity of ATS routes, the density of navigation aids or other technical and operational reasons warrant the establishment of change-over points on shorter route segments.

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

Guidance on the establishment of change-over points is contained in Attachment A (Advisory Circular this CASR)

170.014 Establishment and identification of significant points

1) DGCA establishes significant points for the purpose of defining an ATS route and/or in relation to the requirements of air traffic services for information regarding the progress of aircraft in flight.

2) Significant points are identified by designators.

3) Significant points are established and identified in accordance with the principles set forth in Appendix 2.
170.015 Establishment and identification of standard routes for taxiing aircraft

1) Where necessary, standard routes for taxiing aircraft should be established on an aerodrome between runways, aprons and maintenance areas. Such routes should be direct, simple and where practicable, designed to avoid traffic conflicts.

2) Standard routes for taxiing aircraft should be identified by designators distinctively different from those of the runways and ATS routes.

170.016 Coordination between the operator and air traffic services

1) Air traffic services units, in carrying out their objectives, shall have due regard for the requirements of the operators consequent on their obligations as specified in ICAO Annex 6, and, if so required by the operators, shall make available to them or their designated representatives such information as may be available to enable them or their designated representatives to carry out their responsibilities.

2) When so requested by an operator, messages (including position reports) received by air traffic services units and relating to the operation of the aircraft for which operational control service is provided by that operator shall, so far as practicable, be made available immediately to the operator or a designated representative in accordance with locally agreed procedures. For aircraft subjected to unlawful interference, see 170.023 (3).

170.017 Coordination between military authorities and air traffic services

1) Air traffic services authorities shall establish and maintain close cooperation with military authorities responsible for activities that may affect flights of civil aircraft.

2) Coordination of activities potentially hazardous to civil aircraft shall be effected in accordance with 170.018.

3) Arrangements shall be made to permit information relevant to the safe and expeditious conduct of flights of civil aircraft to be promptly exchanged between air traffic services units and appropriate military units.

a) Air traffic services units shall, either routinely or on request, in accordance with locally agreed procedures, provide appropriate military units with pertinent flight plan and other data concerning flights of civil aircraft. In order to eliminate or reduce the need for interceptions, air traffic services authorities shall designate any areas or routes where the requirements of Annex 2 concerning flight plans, two-way communications and position reporting apply to all flights to ensure that all pertinent data is available in appropriate air traffic services units specifically for the purpose of facilitating identification of civil aircraft.
For aircraft subjected to unlawful interference, see 170.023 (3) and 170.024(1) (c).

b) Special procedures shall be established in order to ensure that:

(i) air traffic services units are notified if a military unit observes that an aircraft which is, or might be, a civil aircraft is approaching, or has entered, any area in which interception might become necessary;

(ii) all possible efforts are made to confirm the identity of the aircraft and to provide it with the navigational guidance necessary to avoid the need for interception.

170.018 Coordination of activities potentially hazardous to civil aircraft

1) The arrangements for activities potentially hazardous to civil aircraft, whether over the territory of a State or over the high seas, shall be coordinated with the appropriate air traffic services authorities. The coordination shall be effected early enough to permit timely promulgation of information regarding the activities in accordance with the provisions of ICAO Annex 15.

2) If the appropriate ATS authority is not that of the State where the organization planning the activities is located, initial coordination should be effected through the ATS authority responsible for the airspace over the State where the organization is located.

3) The objective of the coordination shall be to achieve the best arrangements which will avoid hazards to civil aircraft and minimize interference with the normal operations of such aircraft.

4) In determining these arrangements the following should be applied:

a) the locations or areas, times and durations for the activities should be selected to avoid closure or realignment of established ATS routes, blocking of the most economic flight levels, or delays of scheduled aircraft operations, unless no other options exist;

b) the size of the airspace designated for the conduct of the activities should be kept as small as possible;

c) direct communication between the appropriate ATS authority or air traffic services unit and the organization or unit conducting the activities should be provided for use in the event that civil aircraft emergencies or other unforeseen circumstances require discontinuation of the activities.
5) The appropriate ATS authorities shall be responsible for initiating the promulgation of information regarding the activities.

6) If activities potentially hazardous to civil aircraft take place on a regular or continuing basis, special committees should be established as required to ensure that the requirements of all parties concerned are adequately coordinated.

7) Adequate steps shall be taken to prevent emission of laser beams from adversely affecting flight operations.

**170.019 Aeronautical data**

1) Determination and reporting of air traffic services related aeronautical data shall be in accordance with the accuracy and integrity requirements set forth in Tables 1 to 5 contained in Appendix 5 while taking into account the established quality system procedures. Accuracy requirements for aeronautical data are based upon a 95 per cent confidence level, and in that respect three types of positional data shall be identified: surveyed points (e.g. navigation aids positions), calculated points (mathematical calculations from the known surveyed points of points in space/fixedes) and declared points (e.g. flight information region boundary points). Specifications governing the quality system are given in Annex 15, Chapter 3.

2) Contracting States shall ensure that integrity of aeronautical data is maintained throughout the data process from survey/origin to the next intended user. Aeronautical data integrity requirements shall be based upon the potential risk resulting from the corruption of data and upon the use to which the data item is put. Consequently, the following classifications and data integrity levels shall apply:

a) critical data, integrity level 1 \times 10^{-8}: 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;

b) essential data, integrity level 1 \times 10^{-5}: 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) routine data, integrity level 1 \times 10^{-3}: 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.

3) Protection of electronic aeronautical data while stored or in transit shall be totally monitored by the cyclic redundancy check (CRC). To achieve
protection of the integrity level of critical and essential aeronautical data as classified in (2), a 32- or 24-bit CRC algorithm shall apply respectively.

4) To achieve protection of the integrity level of routine aeronautical data as classified in (2), a 16-bit CRC algorithm should apply.

5) Geographical coordinates indicating latitude and longitude shall be determined and reported to the aeronautical information services authority in terms of the World Geodetic System — 1984 (WGS-84) geodetic reference datum, identifying those geographical coordinates which have been transformed into WGS-84 coordinates by mathematical means and whose accuracy of original field work does not meet the requirements in Appendix 5, Table 1.

6) The order of accuracy of the field work and determinations and calculations derived therefrom shall be such that the resulting operational navigation data for the phases of flight will be within the maximum deviations, with respect to an appropriate reference frame, as indicated in the tables contained in Appendix 5.

a) An appropriate reference frame is that which enables WGS-84 to be realized on a given position and with respect to which all coordinate data are related.

b) Specifications governing the publication of aeronautical data are given in ICAO Annex 4, Chapter 2 and ICAO Annex 15, Chapter 3.

c) For those fixes and points that are serving a dual purpose, e.g. holding point and missed approach point, the higher accuracy applies.

170.020 Coordination between meteorological and air traffic services authority

1) To ensure that aircraft receive the most up-to-date meteorological information for aircraft operations, arrangements shall be made, where necessary, between meteorological and air traffic services authorities for air traffic services personnel:

a) in addition to using indicating instruments, to report, if observed by air traffic services personnel or communicated by aircraft, such other meteorological elements as may be agreed upon;

b) to report as soon as possible to the associated meteorological office meteorological phenomena of operational significance, if observed by air traffic services personnel or communicated by aircraft, which have not been included in the aerodrome meteorological report;

c) to report as soon as possible to the associated meteorological office pertinent information concerning pre-eruption volcanic activity, volcanic eruptions and information concerning volcanic ash cloud. In
addition, area control centres and flight information centres shall report the information to the associated meteorological watch office and volcanic ash advisory centres (VAACs).

2) Close coordination shall be maintained between area control centres, flight information centres and associated meteorological watch offices to ensure that information on volcanic ash included in NOTAM and SIGMET messages is consistent.

170.021 Coordination between aeronautical information service and air traffic services authorities

1) To ensure that aeronautical information services units obtain information to enable them to provide up-to-date pre-flight information and to meet the need for in-flight information, arrangements shall be made between aeronautical information services and air traffic services authorities responsible for air traffic services to report to the responsible aeronautical information services unit, with a minimum of delay:

a) information on aerodrome conditions;
b) the operational status of associated facilities, services and navigation aids within their area of responsibility;
c) the occurrence of volcanic activity observed by air traffic services personnel or reported by aircraft; and
d) any other information considered to be of operational significance.

2) Before introducing changes to the air navigation system, due account shall be taken by the services responsible for such changes of the time needed by the aeronautical information service for the preparation, production and issuance of relevant material for promulgation. To ensure timely provision of the information to the aeronautical information service, close coordination between those services concerned is therefore required.

3) Of particular importance are changes to aeronautical information that affect charts and/or computer-based navigation systems which qualify to be notified by the Aeronautical Information Regulation and Control (AIRAC) system, as specified in Annex 15, Chapter 6 and Appendix 4. The predetermined, internationally agreed AIRAC effective dates in addition to 14 days postage time shall be observed by the responsible air traffic services when submitting the raw information/data to aeronautical information services.

4) The air traffic services responsible for the provision of raw aeronautical information/data to the aeronautical information services shall do so while taking into account accuracy and integrity requirements for aeronautical data as specified in Appendix 5 to this Part.

a) Specifications for the issue of a NOTAM, SNOWTAM and ASHTAM are contained in ICAO Annex 15, Chapter 5.
b) Reports of volcanic activity comprise the information detailed in Annex 3, Chapter 4.

c) AIRAC information is distributed by the aeronautical information service at least 42 days in advance of the AIRAC effective dates with the objective of reaching recipients at least 28 days in advance of the effective date.

d) The schedule of the predetermined, internationally agreed AIRAC common effective dates at intervals of 28 days, including 6 November 1997, and guidance for the AIRAC use are contained in the Aeronautical Information Services Manual (Doc 8126, Chapter 2, 2.6).

170.022 Minimum flight altitudes

DGCA determine and promulgate Minimum flight altitudes for each ATS route and control area over its territory. The minimum flight altitudes determined is provide a minimum clearance above the controlling obstacle located within the areas concerned.

170.023 Service to aircraft in the event of an emergency

1) An aircraft known or believed to be in a state of emergency, including being subjected to unlawful interference, shall be given maximum consideration, assistance and priority over other aircraft as may be necessitated by the circumstances.

   a) To indicate that it is in a state of emergency, an aircraft equipped with an appropriate data link capability and/or an SSR transponder might operate the equipment as follows:

      (i) on Mode A, Code 7700; or
      (ii) on Mode A, Code 7500, to indicate specifically that it is being subjected to unlawful interference; and/or
      (iii) activate the appropriate emergency and/or urgency capability of ADS-B or ADS-C; and/or
      (iv) transmit the appropriate emergency message via CPDLC.

   b) In communications between ATS units and aircraft in the event of an emergency, Human Factors principles should be observed.

      Guidance material on Human Factors principles can be found in the Human Factors Training Manual (Doc 9683).

2) When an occurrence of unlawful interference with an aircraft takes place or is suspected, ATS units shall attend promptly to requests by the aircraft. Information pertinent to the safe conduct of the flight shall continue to be
transmitted and necessary action shall be taken to expedite the conduct of all phases of the flight, especially the safe landing of the aircraft.

3) When an occurrence of unlawful interference with an aircraft takes place or is suspected, ATS units shall, in accordance with locally agreed procedures, immediately inform the appropriate authority designated by the State and exchange necessary information with the operator or its designated representative.

a) A strayed or unidentified aircraft may be suspected as being the subject of unlawful interference. See 170.024.1.3.

b) Procedures relating to the handling of strayed or unidentified aircraft are contained in 2.24.1.

c) PANS-ATM (Doc 4444), Chapter 15, 15.1.3 contains more specific procedures related to unlawful interference.

170.024 In-flight contingency

1) Strayed or unidentified aircraft

a) The terms “strayed aircraft” and “unidentified aircraft” in this paragraph have the following meanings:

(i) Strayed aircraft. An aircraft which has deviated significantly from its intended track or which reports that it is lost.

(ii) Unidentified aircraft. An aircraft which has been observed or reported to be operating in a given area but whose identity has not been established.

b) An aircraft may be considered, at the same time, as a “strayed aircraft” by one unit and as an “unidentified aircraft” by another unit.

c) A strayed or unidentified aircraft may be suspected as being the subject of unlawful interference.

d) As soon as an air traffic services unit becomes aware of a strayed aircraft it shall take all necessary steps as outlined in (i) 2.24.1.1.1 and (ii) 2.24.1.1.2 to assist the aircraft and to safeguard its flight. 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.

(i) 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 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. The requirements in (d) and (e) apply also to ATS units informed in accordance with (c).

(ii) 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.

e) 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:

(i) attempt to establish two-way communication with the aircraft;

(ii) inquire of other air traffic services units within the flight information region about the flight and request their assistance in establishing two-way communication with the aircraft;

(iii) inquire of air traffic services units serving the adjacent flight information regions about the flight and request their assistance in establishing two-way communication with the aircraft;

(iv) attempt to obtain information from other aircraft in the area.

f) The air traffic services unit shall, as necessary, inform the appropriate military unit as soon as the identity of the aircraft has been established.

g) Should the ATS unit consider that a strayed or unidentified aircraft may be the subject of unlawful interference, the appropriate authority designated by the State shall immediately be informed, in accordance with locally agreed procedures.

2) Interception of civil aircraft
a) 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:

(i) attempt to establish two-way communication with the intercepted aircraft via any means available, including the emergency radio frequency 121.5 MHz, unless such communication already exists;
(ii) inform the pilot of the intercepted aircraft of the interception;
(iii) establish contact with the intercept control unit maintaining two-way communication with the intercepting aircraft and provide it with available information concerning the aircraft;
(iv) relay messages between the intercepting aircraft or the intercept control unit and the intercepted aircraft, as necessary;
(v) in close coordination with the intercept control unit take all necessary steps to ensure the safety of the intercepted aircraft;
(vi) inform ATS units serving adjacent flight information regions if it appears that the aircraft has strayed from such adjacent flight information regions.

b) 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:

(i) 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 (a);
(ii) relay messages between the intercepted aircraft and the appropriate ATS unit, the intercept control unit or the intercepting aircraft.

170.025 Time in air traffic services

1) Air traffic services units shall use Coordinated Universal Time (UTC) and shall express the time in hours and minutes and, when required, seconds of the 24-hour day beginning at midnight.

2) Air traffic services units shall be equipped with clocks indicating the time in hours, minutes and seconds, clearly visible from each operating position in the unit concerned.

3) Air traffic services unit clocks and other time recording devices shall be checked as necessary to ensure correct time to within plus or minus 30 seconds of UTC. Wherever data link communications are utilized by an air traffic services unit, clocks and other time-recording devices shall be checked as necessary to ensure correct time to within 1 second of UTC.
4) The correct time shall be obtained from a standard time station or, if not possible, from another unit which has obtained the correct time from such station.

5) Aerodrome control towers shall, prior to an aircraft taxiing for take-off, provide the pilot with the correct time, unless arrangements have been made for the pilot to obtain it from other sources. Air traffic services units shall, in addition, provide aircraft with the correct time on request. Time checks shall be given to the nearest half minute.

170.026 Establishment of requirements for carriage and operation of pressure-altitude reporting transponders

1) States shall establish requirements for carriage and operation of pressure-altitude reporting transponders within defined portions of airspace;

2) This provision is intended to improve the effectiveness of air traffic services as well as airborne collision avoidance systems.

170.027 ATS Safety Management

1) States shall establish a safety programme, in order to achieve an acceptable level of safety in the provision of ATS.

2) The acceptable level of safety to be achieved shall be established by the DGCA. (guidance on ATS safety management is contained in advisory circular this CASR)

3) States shall require, as part of their safety programme, that an air traffic services provider implements a safety management system acceptable to the State that, as a minimum:

   (i) identifies safety hazards;
   (ii) ensures that remedial action necessary to maintain an acceptable level of safety is implemented;
   (iii) provides for continuous monitoring and regular assessment of the safety level achieved; and
   (iv) aims to make continuous improvement to the overall level of safety.

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.

   Guidance on safety management systems is contained in the Safety Management Manual (SMM) (Doc 9859), and associated procedures are contained in the PANS-ATM (Doc 4444).

5) Any significant safety-related change to the ATS system, including the implementation of a reduced separation minimum or a new procedure,
shall only be effected after a safety assessment has demonstrated that an acceptable level of safety will be met and users have been consulted. When appropriate, the responsible authority shall ensure that adequate provision is made for post-implementation monitoring to verify that the defined level of safety continues to be met.

170.028 Common reference system

1) Horizontal reference system

World Geodetic System – 1984 (WGS-84) shall be used as the horizontal (geodetic) reference system for air navigation. Reported aeronautical geographical coordinates (indicating latitude and longitude) shall be expressed in terms of the WGS-84 geodetic reference datum.

2) Vertical reference system

Mean sea level (MSL) datum, which gives the relationship of gravity-related height (elevation) to a surface known as the geoid, shall be used as the vertical reference system for air navigation.

3) Temporal reference system

a) The Gregorian calendar and Coordinated Universal Time (UTC) shall be used as the temporal reference system for air navigation.

b) when a different temporal reference system is used, this shall be indicated in GEN 2.1.2. of the Aeronautical Information Publication.

170.029 Language Proficiency

1) An air traffic services provider shall ensure that air traffic controllers speak and understand the language(s) used for radiotelephony communications;

2) Except when communications between air traffic control units are conducted in a mutually agreed language, the plain language shall be used for such communications.

170.030 Contingency arrangements

1) DGCA develop and promulgate contingency plans for implementation in the event of disruption, or potential disruption, of air traffic services and related supporting service in the airspace for which they are responsible for the provision of such services.

2) Such contingency plan shall be developed with the assistance of ICAO as necessary, in close coordination with the air traffic services authority responsible for the provision of services in adjacent portions of airspace and with airspace users concerned.
a) Guidance material relating to the development, promulgation and implementation of contingency plans is contained in Attachment D.

b) Contingency plans may constitute a temporary deviation from the approved regional air navigation plans; such deviations are approved, as necessary, by the President of the ICAO Council on behalf of the Council.
Sub Part 170.B – AIR TRAFFIC CONTROL SERVICE

170.031 Application

Air traffic control service shall be provided:

(1) to all IFR flights in airspace Classes A, B, C, D and E;

(2) to all VFR flights in airspace Classes B, C and D;

(3) to all special VFR flights;

(4) to all aerodrome traffic at controlled aerodromes.

170.032 Provision of air traffic control service

The parts of air traffic control service described in subpart 170.003 (1) are provided by the various units as follows:

1) Area control service:

   a) by an area control centre; or

   b) 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 and where no area control centre is established.

2) Approach control service:

   a) by an aerodrome control tower or area control centre when it is necessary or desirable to combine under the responsibility of one unit the functions of the approach control service with those of the aerodrome control service or the area control service;

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

   c) *Aerodrome control service:* by an aerodrome control tower.

170.033 Operation of air traffic control service

1) In order to provide air traffic control service, an air traffic control unit shall:

   a) be provided with information on the intended movement of each aircraft, or variations there from, and with current information on the actual progress of each aircraft;
b) determine from the information received, the relative positions of known aircraft to each other;

c) issue clearances and information for the purpose of preventing collision between aircraft under its control and of expediting and maintaining an orderly flow of traffic;

d) coordinate clearances as necessary with other units:
   (i) whenever an aircraft might otherwise conflict with traffic operated under the control of such other units;
   (ii) before transferring control of an aircraft to such other units.

2) Information on aircraft movements, together with a record of air traffic control clearances issued to such aircraft, shall be so displayed as to permit ready analysis in order to maintain an efficient flow of air traffic with adequate separation between aircraft.

3) Air traffic control units should be equipped with devices that record background communication and the aural environment at air traffic controller work stations, capable of retaining the information recorded during at least the last twenty-four hours of operation.

4) Clearances issued by air traffic control units shall provide separation:
   a) between all flights in airspace Classes A and B;
   b) between IFR flights in airspace Classes C, D and E;
   c) between IFR flights and VFR flights in airspace Class C;
   d) between IFR flights and special VFR flights;
   e) between special VFR flights when so prescribed by the appropriate ATS authority,
   f) except that, when requested by an aircraft and if so prescribed by the appropriate ATS authority for the cases listed under (b) above in airspace Classes D and E, a flight may be cleared without separation being so provided in respect of a specific portion of the flight conducted in visual meteorological conditions.

5) Separation by an air traffic control unit shall be obtained by at least one of the following:
   a) vertical separation, obtained by assigning different levels selected from:
(i) the appropriate table of cruising levels in Appendix 3 of Annex 2, or

(ii) a modified table of cruising levels, when so prescribed in accordance with Appendix 3 of Annex 2 for flight above FL 410, except that the correlation of levels to track as prescribed therein shall not apply whenever otherwise indicated inappropriate aeronautical information publications or air traffic control clearances;

b) horizontal separation, obtained by providing:

(i) longitudinal separation, by maintaining an interval between aircraft operating along the same, converging or reciprocal tracks, expressed in time or distance; or

(ii) lateral separation, by maintaining aircraft on different routes or in different geographical areas;

(iii) composite separation, consisting of a combination of vertical separation and one of the other forms of separation contained in (ii) above, using minima for each which may be lower than, but not less than half of, those used for each of the combined elements when applied individually. Composite separation shall only be applied on the basis of regional air navigation agreements.

c) For all airspace where a reduced vertical separation minimum of 300 m (1 000 ft) is applied between FL 290 and FL 410 inclusive, a programme shall be instituted, on a regional basis, for monitoring the height-keeping performance of aircraft operating at these levels, in order to ensure that the implementation and continued application of this vertical separation minimum meets the safety objectives. The coverage of the height-monitoring facilities provided under this programme shall be adequate to permit monitoring of the relevant aircraft types of all operators that operate in RVSM airspace.

d) Arrangements shall be put in place, through interregional agreement, for the sharing between regions of data from monitoring programmes.

170.034 Separation minima

1) The selection of separation minima for application within a given portion of airspace shall be as follows:

a) the separation minima shall be selected from those prescribed by the provisions of the PANS-ATM and the Regional Supplementary Procedures as applicable under the prevailing circumstances except that, where types of aids are used or circumstances prevail which are
not covered by current ICAO provisions, other separation minima shall be established as necessary by:

(i) the appropriate ATS authority, following consultation with operators, for routes or portions of routes contained within the sovereign airspace of a State;

(ii) regional air navigation agreements for routes or portions of routes contained within airspace over the high seas or over areas of undetermined sovereignty. Details of current separation minima prescribed by ICAO are contained in the PANS-ATM (Doc 4444) and Part 1 of the Regional Supplementary Procedures (Doc 7030).

2) the selection of separation minima shall be made in consultation between the appropriate ATS authorities responsible for the provision of air traffic services in neighboring airspace when:

a) traffic will pass from one into the other of the neighboring airspaces;

b) routes are closer to the common boundary of the neighboring airspaces than the separation minima applicable in the circumstances.

3) Details of the selected separation minima and of their areas of application shall be notified:

a) to the ATS units concerned; and

b) to pilots and operators through aeronautical information publications, where separation is based on the use by aircraft of specified navigation aids or specified navigation techniques.

170.035 Responsibility for control

1) Responsibility for control of individual flights
A controlled flight shall be under the control of only one air traffic control unit at any given time.

2) Responsibility for control within a given block of airspace
Responsibility for the control of all aircraft operating within a given block of airspace shall be vested in a single air traffic control unit. However, control of an aircraft or groups of aircraft may be delegated to other air traffic control units provided that coordination between all air traffic control units concerned is assured.

170.036 Transfer of responsibility for control

1) Place or time of transfer
The responsibility for the control of an aircraft shall be transferred from one air traffic control unit to another as follows:

a) Between two units providing area control service. The responsibility for the control of an aircraft shall be 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 area control centre having control of the aircraft or at such other point or time as has been agreed between the two units.

b) Between a unit providing area control service and a unit providing approach control service. The responsibility for the control of an aircraft shall be transferred from a unit providing area control service to a unit providing approach control service, and vice versa, at a point or time agreed between the two units.

c) Between a unit providing approach control service and an aerodrome control tower

(i) Arriving aircraft. The responsibility for the control of an arriving aircraft shall be transferred from the unit providing approach control service to the aerodrome control tower, when the aircraft:

- is in the vicinity of the aerodrome, and:
  - it is considered that approach and landing will be completed in visual reference to the ground, or
  - it has reached uninterrupted visual meteorological conditions, or
- is at a prescribed point or level, as specified in letters of agreement or ATS unit instructions; or
- has landed.

(ii) Departing aircraft. The responsibility for control of a departing aircraft shall be transferred from the aerodrome control tower to the unit providing approach control service:

- when visual meteorological conditions prevail in the vicinity of the aerodrome:
  - prior to the time the aircraft leaves the vicinity of the aerodrome, or
  - prior to the aircraft entering instrument meteorological conditions, or at a prescribed point or level,

as specified in letters of agreement or ATS unit instructions;
e) when instrument meteorological conditions prevail at the aerodrome:
   o immediately after the aircraft is airborne, or
   o at a prescribed point or level,

   as specified in letters of agreement or ATS unit instructions.

d) Between control sectors/positions within the same air traffic control unit

   The responsibility for control of an aircraft shall be 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 ATS unit instructions.

2) Coordination of transfer

a) Responsibility for control of an aircraft shall not be transferred from one air traffic control unit to another without the consent of the accepting control unit, which shall be obtained in accordance with (b), (i), (ii), and.

b) The transferring control unit shall communicate to the accepting control unit the appropriate parts of the current flight plan and any control information pertinent to the transfer requested.

   (i) Where transfer of control is to be effected using radar or ADS-B data, the control information pertinent to the transfer shall include information regarding the position and, if required, the track and speed of the aircraft, as observed by radar or ADS-B immediately prior to the transfer.

   (ii) Where transfer of control is to be effected using ADS-C data, the control information pertinent to the transfer shall include the four-dimensional position and other information as necessary.

c) The accepting control unit shall:

   (i) indicate its ability to accept control of the aircraft on the terms specified by the transferring control unit, unless by prior agreement between the two units concerned, the absence of any such indication is understood to signify acceptance of the terms specified, or indicate any necessary changes thereto; and

   (ii) specify any other information or clearance for a subsequent portion of the flight, which it requires the aircraft to have at the time of transfer.
d) The accepting control unit shall notify the transferring control unit when it has established two-way voice and/or data link communications with and assumed control of the aircraft concerned, unless otherwise specified by agreement between the two control units concerned.

e) Applicable coordination procedures, including transfer of control points, shall be specified in letters of agreement and ATS unit instructions as appropriate.

170.037 Air traffic control clearances

Air traffic control clearances shall be based solely on the requirements for providing air traffic control service.

1) Contents of clearances

a) An air traffic control clearance shall indicate:
   (i) aircraft identification as shown in the flight plan;
   (ii) clearance limit;
   (iii) route of flight;
   (iv) level(s) of flight for the entire route or part thereof and changes of levels if required;

b) Standard departure and arrival routes and associated procedures should be established when necessary to facilitate:
   (i) the safe, orderly and expeditious flow of air traffic;
   (ii) the description of the route and procedure in air traffic control clearances.

2) Read-back of clearances and safety-related information

a) The flight crew shall read back to the air traffic controller safety-related parts of ATC clearances and instructions which are transmitted by voice. The following items shall always be read back:
   (i) ATC route clearances;
   (ii) clearances and instructions to enter, land on, take off from, hold short of, cross and backtrack on any runway; and
   (iii) runway-in-use, altimeter settings, SSR codes, level instructions, heading and speed instructions and, whether issued by the controller or contained in ATIS broadcasts, transition levels.
(iv) 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.

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

c) Unless specified by the appropriate ATS authority, voice read-back of CPDLC messages shall not be required.

2) Coordination of clearances

An air traffic control clearance shall be coordinated between air traffic control units to cover the entire route of an aircraft or a specified portion thereof as follows:

a) An aircraft shall be cleared for the entire route to the aerodrome of first intended landing:
   (1) when it has been possible, prior to departure, to coordinate the clearance between all the units under whose control the aircraft will come; or
   (2) when there is reasonable assurance that prior coordination will be effected between those units under whose control the aircraft will subsequently come.

b) When coordination as in (i) has not been achieved or is not anticipated, the aircraft shall be cleared only to that point where coordination is reasonably assured; prior to reaching such point, or at such point, the aircraft shall receive further clearance, holding instructions being issued as appropriate.

   (1) when prescribed by the appropriate ATS authority, aircraft shall contact a downstream air traffic control unit, for the purpose of receiving a downstream clearance prior to the transfer of control point.

   (a) Aircraft shall maintain the necessary two-way communication with the current air traffic control unit whilst obtaining a downstream clearance.
   (b) A clearance issued as a downstream clearance shall be clearly identifiable as such to the pilot.
   (c) Unless coordinated, downstream clearances shall not affect the aircraft’s original flight profile in any airspace, other than that of the air traffic control unit responsible for the delivery of the downstream clearance.
(d) Where practicable, and where data link communications are used to facilitate downstream clearance delivery, two-way voice communications between the pilot and the air traffic control unit providing the downstream clearance should be available.

(2) When coordination as in (1) has not been achieved or is not anticipated, the aircraft shall be cleared only to that point where coordination is reasonably assured; prior to reaching such point, or at such point, the aircraft shall receive further clearance, holding instructions being issued as appropriate.

(3) When an aircraft intends to depart from an aerodrome within a control area to enter another control area within a period of thirty minutes, or such other specific period of time as has been agreed between the area control centres concerned, coordination with the subsequent area control centre shall be effected prior to issuance of the departure clearance.

(4) When an aircraft intends to leave a control area for flight outside controlled airspace, and will subsequently re-enter the same or another control area, a clearance from point of departure to the aerodrome of first intended landing may be issued. Such clearance or revisions thereto shall apply only to those portions of the flight conducted within controlled airspace.

170.038 Air traffic flow management

1) Air traffic flow management (ATFM) shall be implemented for airspace where air traffic demand at times exceeds, or is expected to exceed, the declared capacity of the air traffic control services concerned;

2) ATFM should be implemented on the basis of regional air navigation agreements or, if appropriate, through multilateral agreements. Such agreements should make provision for common procedures and common methods of capacity determination;

3) When it becomes apparent to an ATC unit that traffic additional to that already accepted cannot be accommodated within a given period of time at a particular location or in a particular area, or can only be accommodated at a given rate, that unit shall so advise the ATFM unit, when such is established, as well as, when appropriate, ATS units concerned. Flight crews of aircraft destined to the location or area in question and operators concerned shall also be advised of the delays expected or the restrictions that will be applied.

170.039 Control of persons and vehicles at aerodromes
1) The movement of persons or vehicles including towed aircraft on the manoeuvring area of an aerodrome shall be controlled by the aerodrome control tower as necessary to avoid hazard to them or to aircraft landing, taxiing or taking off;

2) In conditions where low visibility procedures are in operation:
   a) persons and vehicles operating on the manoeuvring area of an aerodrome shall be restricted to the essential minimum, and particular regard shall be given to the requirements to protect the ILS/MLS sensitive area(s) when Category II or Category III precision instrument operations are in progress;
   b) subject to the provisions in c), the minimum separation between vehicles and taxiing aircraft shall be as prescribed by the appropriate ATS authority taking into account the aids available;
   c) when mixed ILS and MLS Category II or Category III precision instrument operations are taking place to the same runway continuously, the more restrictive ILS or MLS critical and sensitive areas shall be protected.

3) Emergency vehicles proceeding to the assistance of an aircraft in distress shall be afforded priority over all other surface movement traffic.

4) Subject to the provisions in 3.8.3, vehicles on the manoeuvring area shall be required to comply with the following rules:
   a) vehicles and vehicles towing aircraft shall give way to aircraft which are landing, taking off or taxiing;
   b) vehicles shall give way to other vehicles towing aircraft;
   c) vehicles shall give way to other vehicles in accordance with ATS unit instructions;
   d) notwithstanding the provisions of a), b) and c), vehicles and vehicles towing aircraft shall comply with instructions issued by the aerodrome control tower.

170.040 Provision of radar and ADS-B

Radar and ADS-B ground systems should provide for the display of safety-related alerts and warnings, including conflict alert, conflict prediction, minimum safe altitude warning and unintentionally duplicated SSR codes.

170.041 Use of surface movement radar (SMR)
In the absence of visual observation of all or part of the manoeuvring area or to supplement visual observation, surface movement radar (SMR) provided in accordance with the provisions of ICAO Annex 14, Volume I, or other suitable surveillance equipment, should be utilized to:

1) monitor the movement of aircraft and vehicles on the manoeuvring area;

2) provide directional information to pilots and vehicle drivers as necessary; and;

3) provide advice and assistance for the safe and efficient movement of aircraft and vehicles on the manoeuvring area.
Sub Part 170.C - FLIGHT INFORMATION SERVICE

170.042 Application

1) Flight information service shall be provided to all aircraft which are likely to be affected by the information and which are:
   (a) provided with air traffic control service; or
   (b) otherwise known to the relevant air traffic services units.

2) Where air traffic services units provide both flight information service and air traffic control service, the provision of air traffic control service shall have precedence over the provision of flight information service whenever the provision of air traffic control service so requires.

170.043 Scope of flight information service

1) Flight information service shall include the provision of pertinent:
   a) SIGMET and AIRMET information;
   b) information concerning pre-eruption volcanic activity, volcanic eruptions and volcanic ash clouds;
   c) information concerning the release into the atmosphere of radioactive materials or toxic chemicals;
   d) information on changes in the serviceability of navigation aids;
   e) information on changes in condition of aerodromes and associated facilities, including information on the state of the aerodrome movement areas when they are affected by snow, ice or significant depth of water;
   f) information on unmanned free balloons; and of any other information likely to affect safety.

2) Flight information service provided to flights shall include, in addition to that outlined in 4.2.1, the provision of information concerning:
   a) weather conditions reported or forecast at departure, destination and alternate aerodromes;
   b) collision hazards, to aircraft operating in airspace Classes C, D, E, F and G;
   c) for flight over water areas, in so far as practicable and when requested by a pilot, any available information such as radio call
sign, position, true track, speed, etc., of surface vessels in the area.

3) ATS units should transmit, as soon as practicable, special air-reports to other aircraft concerned, to the associated meteorological office, and to other ATS units concerned. Transmissions to aircraft should be continued for a period to be determined by agreement between the meteorological and air traffic services authorities concerned.

4) Flight information service provided to VFR flights shall include, in addition to that outlined in 4.2.1, the provision of available information concerning traffic and weather conditions along the route of flight that are likely to make operation under the visual flight rules impracticable.

170.043 Operational flight information service broadcasts

1) Application

a) The meteorological information and operational information concerning navigation aids and aerodromes included in the flight information service shall, whenever available, be provided in an operationally integrated form.

b) Where integrated operational flight information messages are to be transmitted to aircraft, they should be transmitted with the content and, where specified, in the sequence indicated, for the various phases of flight.

c) Operational flight information service broadcasts, when provided, should consist of messages containing integrated information regarding selected operational and meteorological elements appropriate to the various phases of flight. These broadcasts should be of three major types, i.e. HF, VHF and ATIS.

d) Use of the OFIS messages in directed request/reply transmissions When requested by the pilot, the applicable OFIS message(s) shall be transmitted by the appropriate ATS unit.

2) HF operational flight information service (OFIS) broadcasts

a) HF operational flight information service (OFIS) broadcasts should be provided when it has been determined by regional air navigation agreements that a requirement exists.

b) Whenever such broadcasts are provided:

(i) the information should be in accordance with 4.3.2.5, as applicable, subject to regional air navigation agreements;
(ii) the aerodromes for which reports and forecasts are to be included should be as determined by regional air navigation agreements;

(iii) the time-sequencing of stations participating in the broadcast should be as determined by regional air navigation agreements;

(iv) the HF OFIS broadcast message should take into consideration human performance. The broadcast message should not exceed the length of time allocated for it by regional air navigation agreements, care being taken that the readability is not impaired by the speed of the transmission;

(v) each aerodrome message should be identified by the name of the aerodrome to which the information applies;

(vi) when information has not been received in time for a broadcast, the latest available information should be included together with the time of that observation;

(vii) the full broadcast message should be repeated if this is feasible within the remainder of the time allotted to the broadcasting station;

(viii) the broadcast information should be updated immediately a significant change occurs; and

(ix) the HF OFIS message should be prepared and disseminated by the most appropriate unit(s) as designated by each State.

c) Pending the development and adoption of a more suitable form of speech for universal use in aeronautical radiotelephony communications, HF OFIS broadcasts concerning aerodromes designated for use by international air services should be available in the English language.

d) Where HF OFIS broadcasts are available in more than one language, a discrete channel should be used for each language.

e) HF operational flight information service broadcast messages should contain the following information in the sequence indicated or as determined by regional air navigation agreements:
(i) En-route weather information Information on significant en-route weather phenomena should be in the form of available SIGMET as prescribed in Annex 3.

(ii) Aerodrome information including:
  o name of aerodrome;
  o time of observation;
  o essential operational information;
  o surface wind direction and speed; if appropriate, maximum wind speed;
  o visibility and, when applicable, runway visual range (RVR);
  o present weather; cloud below 1 500 m (5 000 ft) or below the highest
  o minimum sector altitude, whichever is greater; cumulonimbus; if the sky is obscured, vertical visibility when available; and
  o aerodrome forecast.

3) VHF operational flight information service (OFIS) broadcasts

a) VHF operational flight information service broadcasts should be provided as determined by regional air navigation agreements.

b) Whenever such broadcasts are provided:

(i) the aerodromes for which reports and forecasts are to be included should be as determined by regional air navigation agreements;

(ii) each aerodrome message should be identified by the name of the aerodrome to which the information applies;

(iii) when information has not been received in time for a broadcast, the latest available information should be included together with the time of that observation;

(iv) the broadcasts should be continuous and repetitive;

(v) The VHF OFIS broadcast message should take into consideration human performance. The broadcast message should, whenever practicable, not exceed five
minutes, care being taken that the readability is not impaired by the speed of the transmission;

(vi) the broadcast message should be updated on a scheduled basis as determined by regional air navigation agreements. In addition it should be expeditiously updated immediately a significant change occurs; and

(vii) the VHF OFIS message should be prepared and disseminated by the most appropriate unit(s) as designated by each State.

c) Pending the development and adoption of a more suitable form of speech for universal use in aeronautical radiotelephony communications, VHF OFIS broadcasts concerning aerodromes designated for use by international air services should be available in the English language.

d) Where VHF OFIS broadcasts are available in more than one language, a discrete channel should be used for each language.

e) VHF operational flight information service broadcast messages should contain the following information in the sequence indicated:

(i) name of aerodrome;
(ii) time of observation;
(ii) landing runway;
(iv) significant runway surface conditions and, if appropriate, braking action;
(v) changes in the operational state of the navigation aids, if appropriate;
(iv) holding delay, if appropriate;
(v) surface wind direction and speed; if appropriate, maximum wind speed;
(vi) visibility and, when applicable, runway visual range (RVR);
(vii) present weather;
(viii) 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;

(ix) air temperature;

(x) dew point temperature;

(xi) QNH altimeter setting;

(xii) supplementary information on recent weather of operational significance and, where necessary, wind shear;

(xiii) trend forecast, when available; and

(ix) notice of current SIGMET messages.

4) Voice-automatic terminal information service (Voice-ATIS) broadcasts.

a) Voice-automatic terminal information service (Voice-ATIS) broadcasts shall be provided at aerodromes where there is a requirement to reduce the communication load on the ATS VHF air-ground communication channels. When provided, they shall comprise:

(i) one broadcast serving arriving aircraft; or

(ii) one broadcast serving departing aircraft; or

(iii) one broadcast serving both arriving and departing aircraft; or

(iv) two broadcasts serving arriving and departing aircraft respectively at those aerodromes where the length of a broadcast serving both arriving and departing aircraft would be excessively long.

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

c) Voice-ATIS broadcasts shall not be transmitted on the voice channel of an ILS.

d) Whenever Voice-ATIS is provided, the broadcast shall be continuous and repetitive.

e) The information contained in the current broadcast shall immediately be made known to the ATS unit(s) concerned with
the provision to aircraft of information relating to approach, landing and take-off, whenever the message has not been prepared by that (those) unit(s).

f) Voice-ATIS broadcasts provided at designated aerodromes for use by international air services shall be available in the English language as a minimum.

g) Where Voice-ATIS broadcasts are available in more than one language, a discrete channel should be used for each language.

h) The Voice-ATIS broadcast message should, whenever practicable, not exceed 30 seconds, care being taken that the readability of the ATIS message is not impaired by the speed of the transmission or by the identification signal of a navigation aid used for transmission of ATIS. The ATIS broadcast message should take in consideration human performance.

5) Data link-automatic terminal information service (D-ATIS)

a) Where a D-ATIS supplements the existing availability of Voice-ATIS, the information shall be identical in both content and format to the applicable Voice-ATIS broadcast.

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

b) Where a D-ATIS supplements the existing availability of Voice-ATIS and the ATIS requires updating, Voice-ATIS and D-ATIS shall be updated simultaneously.

6) Automatic terminal information service (voice and/or data link)

a) Whenever Voice-ATIS and/or D-ATIS is provided:

(i) the information communicated shall relate to a single aerodrome;

(ii) the information communicated shall be updated immediately a significant change occurs;

(ii) the preparation and dissemination of the ATIS message shall be the responsibility of the air traffic services;

(iv) individual ATIS messages shall be identified by a designator in the form of a letter of the ICAO spelling alphabet. Designators assigned to consecutive ATIS messages shall be in alphabetical order;
(v) aircraft shall acknowledge receipt of the information upon establishing communication with the ATS unit providing approach control service or the aerodrome control tower, as appropriate;

(vi) the appropriate ATS unit shall, when replying to the message in e) above or, in the case of arriving aircraft, at such other time as may be prescribed by the appropriate ATS authority, provide the aircraft with the current altimeter setting; and

(vii) the meteorological information shall be extracted from the local meteorological routine or special report.

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

c) Information contained in a current ATIS, the receipt of which has been acknowledged by the aircraft concerned, need not be included in a directed transmission to the aircraft, with the exception of the altimeter setting, which shall be provided in accordance with[(a) (vii)]. that is no longer current, any element of information that needs updating shall be transmitted to the aircraft without delay.

d) Contents of ATIS should be kept as brief as possible. Information additional to that specified in (7) to (9), for example information already available in aeronautical information publications (AIPs) and NOTAM, should only be included when justified in exceptional circumstances.

7) ATIS for arriving and departing aircraft ATIS messages containing both arrival and departure information shall contain the following elements of information in the order listed:

a) name of aerodrome;

b) arrival and/or departure indicator;

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

d) designator;

e) time of observation, if appropriate;

f) type of approach(es) to be expected;
g) the runway(s) in use; status of arresting system constituting a potential hazard, if any;

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

i) holding delay, if appropriate;

j) transition level, if applicable;

k) other essential operational information;

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

m) visibility and, when applicable, RVR;

n) present weather;

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

p) air temperature;

q) dew point temperature;

r) altimeter setting(s);

s) any available information on significant meteorological phenomena in the approach and climb-out areas including wind shear, and information on recent weather of operational significance;

t) trend forecast, when available; and

u) specific ATIS instructions.

8) ATIS for arriving aircraft ATIS messages containing arrival information only shall contain the following elements of information in the order listed:

a) name of aerodrome;

b) arrival indicator;

c) contract type, if communication is via D-ATIS;
d) designator;

e) time of observation, if appropriate;

f) type of approach(es) to be expected;

g) main landing runway(s); status of arresting system constituting a potential hazard, if any;

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

i) holding delay, if appropriate;

j) transition level, if applicable;

k) other essential operational information;

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

m) visibility and, when applicable, RVR;

n) present weather;

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

p) air temperature;

q) dew point temperature;

r) altimeter setting(s);

s) any available information on significant meteorological phenomena in the approach area including wind shear, and information on recent weather of operational significance;

t) trend forecast, when available; and

u) specific ATIS instructions.
9) ATIS for departing aircraft ATIS messages containing departure information only shall contain the following elements of information in the order listed:
   a) name of aerodrome;
   b) departure indicator;
   c) contract type, if communication is via D-ATIS;
   d) designator;
   e) time of observation, if appropriate;
   f) runway(s) to be used for take-off; status of arresting system constituting a potential hazard, if any;
   g) significant surface conditions of runway(s) to be used for take-off and, if appropriate, braking action;
   h) departure delay, if appropriate;
   i) transition level, if applicable;
   j) other essential operational information;
   k) surface wind direction and speed, including significant variations and, if surface wind sensors related specifically to the sections of runway(s) in use are available and the information is required by operators, the indication of the runway and the section of the runway to which the information refers;
   l) visibility and, when applicable, RVR;
   m) present weather;
   n) 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;
   o) air temperature;
   p) dew point temperature;
   q) altimeter setting(s);
   r) any available information on significant meteorological phenomena in the climb-out area including wind shear;
   s) trend forecast, when available; and
t) specific ATIS instructions.

170.044 VOLMET broadcasts and D-VOLMET service

1) HF and/or VHF VOLMET broadcasts and/or D-VOLMET service should be provided when it has been determined by regional air navigation agreements that a requirement exists.

2) VOLMET broadcasts should use standard radiotelephony phraseologies.
Sub Part 170.D - ALERTING SERVICE

170.045 Application

1) Alerting service shall be provided:

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

   b) in so far as practicable, to all other aircraft having filed a flight plan or
      otherwise known to the air traffic services; and

   c) to any aircraft known or believed to be the subject of unlawful
      interference.

2) Flight information centres or area control centres shall serve as the central
   point for collecting all information relevant to a state of emergency of an
   aircraft operating within the flight information region or control area
   concerned and for forwarding such information to the appropriate rescue
   coordination centre;

3) In the event of a state of emergency arising to an aircraft while it is under
   the control of an aerodrome control tower or approach control unit, such
   unit shall notify immediately the flight information centre or area control
   centre responsible which shall in turn notify the rescue coordination centre,
   except that notification of the area control centre, flight information centre,
   or rescue coordination centre shall not be required when the nature of the
   emergency is such that the notification would be superfluous.

   (a) Nevertheless, whenever the urgency of the situation so requires, the
       aerodrome control tower or approach control unit responsible shall
       first alert and take other necessary steps to set in motion all
       appropriate local rescue and emergency organizations which can
       give the immediate assistance required.

170.046 Notification of rescue coordination centres

1) Without prejudice to any other circumstances that may render such
   notification advisable, air traffic services units shall, except as prescribed
   in 170.049(1), notify rescue coordination centres immediately an aircraft is
   considered to be in a state of emergency in accordance with the following:

   a) Uncertainty phase when:

      (i) no communication has been received from an aircraft within a
          period of thirty minutes after the time a communication should
          have been received, or from the time an unsuccessful attempt to
establish communication with such aircraft was first made, whichever is the earlier, or when

(ii) an aircraft fails to arrive within thirty minutes of the estimated time of arrival last notified to or estimated by air traffic services units, whichever is the later,

except when no doubt exists as to the safety of the aircraft and its occupants.

b) Alert phase when:

(i) following the uncertainty phase, subsequent attempts to establish communication with the aircraft or inquiries to other relevant sources have failed to reveal any news of the aircraft, or when

(ii) an aircraft has been cleared to land and fails to land within five minutes of the estimated time of landing and communication has not been re-established with the aircraft, or when

(iii) information has been received which indicates that the operating efficiency of the aircraft has been impaired, but not to the extent that a forced landing is likely,

except when evidence exists that would allay apprehension as to the safety of the aircraft and its occupants, or when

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

c) Distress phase when:

(i) following the alert phase, further unsuccessful attempts to establish communication with the aircraft and more widespread unsuccessful inquiries point to the probability that the aircraft is in distress, or when

(ii) the fuel on board is considered to be exhausted, or to be insufficient to enable the aircraft to reach safety, or when

(iii) information is received which indicates that the operating efficiency of the aircraft has been impaired to the extent that a forced landing is likely, or when
(iv) information is received or it is reasonably certain that the aircraft is about to make or has made a forced landing,

except when there is reasonable certainty that the aircraft and its occupants are not threatened by grave and imminent danger and do not require immediate assistance

2) The notification shall contain such of the following information as is available in the order listed:

a) INCERFA, ALERFA or DETRESFA, as appropriate to the phase of the emergency;
b) agency and person calling;
c) nature of the emergency;
d) significant information from the flight plan;
e) unit which made last contact, time and means used;
f) last position report and how determined;
g) colour and distinctive marks of aircraft;
h) dangerous goods carried as cargo;
i) any action taken by reporting office; and
j) other pertinent remarks

3) Such part of the information specified in 170.049 3), which is not available at the time notification is made to a rescue coordination centre, should be sought by an air traffic services unit prior to the declaration of a distress phase, if there is reasonable certainty that this phase will eventuate.

4) Further to the notification in 170.046 1) the rescue coordination centre shall, without delay, be furnished with:

a) any useful additional information, especially on the development of the state of emergency through subsequent phases; or

b) information that the emergency situation no longer exists.

c) The cancellation of action initiated by the rescue coordination centre is the responsibility of that centre.

170.047 Use of communication facilities

Air traffic services units shall, as necessary, use all available communication facilities to Endeavour to establish and maintain communication with an aircraft in a state of emergency, and to request news of the aircraft.
170.048 Plotting aircraft in a state of emergency

When a state of emergency is considered to exist, the flight of the aircraft involved shall be plotted on a chart in order to determine the probable future position of the aircraft and its maximum range of action from its last known position. The flights of other aircraft known to be operating in the vicinity of the aircraft involved shall also be plotted in order to determine their probable future positions and maximum endurance.

170.049 Information to the operator

1) When an area control or a flight information centre decides that an aircraft is in the uncertainty or the alert phase, it shall, when practicable, advise the operator prior to notifying the rescue coordination centre;

2) If an aircraft is in the distress phase, the rescue coordination centre has to be notified immediately in accordance with 170.046 2);

3) All information notified to the rescue coordination centre by an area control or flight information centre shall whenever practicable, also be communicated, without delay, to the operator.

170.050 Information to aircraft operating in the vicinity of an aircraft in a state of emergency

1) When it has been established by an air traffic services unit that an aircraft is in a state of emergency, other aircraft known to be in the vicinity of the aircraft involved shall, except as provided in 170.050 2), be informed of the nature of the emergency as soon as practicable;

2) When an air traffic services unit knows or believes that an aircraft is being subjected to unlawful interference, no reference shall be made in ATS air-ground communications to the nature of the emergency unless it has first been referred to in communications from the aircraft involved and it is certain that such reference will not aggravate the situation.
Sub Part 170.E - Air Traffic Services Requirements For Communications

170.051  Aeronautical mobile services (air-ground communications)

1) General

a) Radiotelephony and/or data link shall be used in air-ground communications for air traffic services purposes. Requirements for ATS units to be provided with and to maintain guard on the emergency channel 121.5 MHz are specified in ICAO Annex 10, Volumes II and V.

b) Where RCP types have been prescribed by States for ATM functions, ATS units shall, in addition to the requirements specified in a), be provided with communication equipment which will enable them to provide ATS in accordance with the prescribed RCP type(s).

Information on RCP and associated procedures, and guidance concerning the approval process, will be contained in the Manual on Required Communication Performance (RCP) (Doc 9869) (in preparation). This document also contains references to other documents produced by States and international bodies concerning communication systems and RCP.

c) When direct pilot-controller two-way radiotelephony or data link communications are used for the provision of air traffic control service, recording facilities shall be provided on all such air-ground communication channels. Requirements for retention of all automatic recordings of communications in ATC are specified in ICAO Annex 10, Volume II, 3.5.1.5.

d) Recordings of communications channels as required in paragraph c) shall be retained for a period of at least thirty days.

2) For flight information service

a) Air-ground communication facilities shall enable two-way communications to take place between a unit providing flight information service and appropriately equipped aircraft flying anywhere within the flight information region.

b) Whenever practicable, air-ground communication facilities for flight information service should permit direct, rapid, continuous and static-free two-way communications.

3) For area control service
a) Air-ground communication facilities shall enable two-way communications to take place between a unit providing area control service and appropriately equipped aircraft flying anywhere within the control area(s).

b) Whenever practicable, airground communication facilities for area control service should permit direct, rapid, continuous and static-free two-way communications.

c) Where air-ground voice communication channels are used for area control service and are worked by air-ground communicators, suitable arrangements should be made to permit direct pilot-controller voice communications, as and when required.

4) For approach control service

a) Air-ground communication facilities shall enable direct, rapid, continuous and static-free two-way communications to take place between the unit providing approach control service and appropriately equipped aircraft under its control.

b) Where the unit providing approach control service functions as a separate unit, air-ground communications shall be conducted over communication channels provided for its exclusive use.

5) For aerodrome control service

a) Air-ground communication facilities shall enable direct, rapid, continuous and static-free two-way communications to take place between an aerodrome control tower and appropriately equipped aircraft operating at any distance within 45 km (25 NM) of the aerodrome concerned.

b) Where conditions warrant, separate communication channels should be provided for the control of traffic operating on the manoeuvring area.

170.052 Aeronautical fixed service (ground-ground communication)

1) General

a) Direct-speech and/or data link communications shall be used in ground-ground communications for air traffic services purposes.

(i) Indication by time of the speed with which the communication should be established is provided as a guide to communication services, particularly to determine the types of communication channels required, e.g. that “instantaneous” is intended to refer to communications which effectively provide for immediate
access between controllers; "fifteen seconds" to accept switchboard operation and "five minutes" to mean methods involving retransmission.

(ii) Requirements for retention of all automatic recordings of communications in ATC are specified in ICAO Annex 10, Volume II, 3.5.1.5.

b) Where RCP types have been prescribed by States for ATM functions, ATS units shall, in addition to the requirements specified in paragraph (a), be provided with communication equipment which will enable them to provide ATS in accordance with the prescribed RCP type(s).

Information on RCP and associated procedures, and guidance concerning the approval process, will be contained in the Manual on Required Communication Performance (RCP) (Doc 9869) (in preparation). This document also contains references to other documents produced by States and international bodies concerning communication systems and RCP.

2) Communication within a flight information region

a) Communications between air traffic services units

(i) A flight information centre shall have facilities for communications with the following units providing a service within its area of responsibility:

(a) the area control centre, unless collocated;
(b) approach control units;
(c) aerodrome control towers.

(ii) An area control centre, in addition to being connected to the flight information centre as prescribed in paragraph (i), shall have facilities for communications with the following units providing a service within its area of responsibility:

(a) approach control units;
(b) aerodrome control towers;
(c) air traffic services reporting offices, when separately established.

(iii) An approach control unit, in addition to being connected to the flight information centre and the area control centre as prescribed in paragraph (i) and (ii), shall have facilities for communications with the associated aerodrome control tower(s) and, when separately established, the associated air traffic services reporting office(s).
(iv) An aerodrome control tower, in addition to being connected to the flight information centre, the area control centre and the approach control unit as prescribed in paragraph (i), (ii) and (iii), shall have facilities for communications with the associated air traffic services reporting office, when separately established.

b) Communications between air traffic services units and other units

(i) A flight information centre and an area control centre shall have facilities for communications with the following units providing a service within their respective area of responsibility:

(a) appropriate military units;
(b) the meteorological office serving the centre;
(c) the aeronautical telecommunications station serving the centre;
(d) appropriate operator’s offices;
(e) the rescue coordination centre or, in the absence of such centre, any other appropriate emergency service;
(f) the international NOTAM office serving the centre.

(ii) An approach control unit and an aerodrome control tower shall have facilities for communications with the following units providing a service within their respective area of responsibility:

(a) appropriate military units;
(b) rescue and emergency services (including ambulance, fire, etc.);
(c) the meteorological office serving the unit concerned;
(d) the aeronautical telecommunications station serving the unit concerned;
(e) the unit providing apron management service, when separately established.

(iii) The communication facilities required under paragraph (i) (a) and (ii) (a) shall include provisions for rapid and reliable communications between the air traffic services unit concerned and the military unit(s) responsible for control of interception operations within the area of responsibility of the air traffic services unit.

c) Description of communication facilities

(i) The communication facilities required under paragraph (a), (b) (i) (a) and (b) (ii) (a) (b) (c) shall include provisions for:

(a) communications by direct speech alone, or in combination with data link communications, whereby for the purpose of transfer of control using radar or ADS-B, the
communications can be established instantaneously and
for other purposes the communications can normally be
established within fifteen seconds; and

(b) printed communications, when a written record is required;
the message transit time for such communications being no
longer than five minutes.

(ii) In all cases not covered by paragraph (i), the communication
facilities should include provisions for:

(a) communications by direct speech alone, or in combination
with data link communications, whereby the
communications can normally be established within fifteen
seconds; and

(b) printed communications, when a written record is required;
the message transit time for such communications being no
longer than five minutes.

(iii) In all cases where automatic transfer of data to and/or from air
traffic services computers is required, suitable facilities for
automatic recording shall be provided.

(iv) The communication facilities required in accordance with
paragraph (a) and (b) should be supplemented, as and where
necessary, by facilities for other forms of visual or audio
communications, for example, closed circuit television or
separate information processing systems.

(v) The communication facilities required under (b) (ii) a), b) and c)
shall include provisions for communications by direct speech
arranged for conference communications.

(vi) The communication facilities required under (b) (ii) d) should
include provisions for communications by direct speech
arranged for conference communications, whereby the
communications can normally be established within fifteen
seconds.

(vii) All facilities for direct-speech or data link communications
between air traffic services units and between air traffic services
units and other units described under (b) (i) and (ii) shall be
provided with automatic recording.

(viii) Recordings of data and communications as required in
paragraph (iii) and (vii) shall be retained for a period of at least
thirty days.
c) Communications between flight information regions

(i) Flight information centres and area control centres shall have facilities for communications with all adjacent flight information centres and area control centres.

(a) These communication facilities shall in all cases include provisions for messages in a form suitable for retention as a permanent record, and delivery in accordance with transit times specified by regional air navigation agreements.

(b) Unless otherwise prescribed on the basis of regional air navigation agreements, facilities for communications between area control centres serving contiguous control areas shall, in addition, include provisions for dircetspeech and, where applicable, data link communications, with automatic recording, whereby for the purpose of transfer of control using radar, ADS-B or ADS-C data, the communications can be established instantaneously and for other purposes the communications can normally be established within fifteen seconds.

(c) When so required by agreement between the States concerned in order to eliminate or reduce the need for interceptions in the event of deviations from assigned track, facilities for communications between adjacent flight information centres or area control centres other than those mentioned in b) shall include provisions for direct speech alone, or in combination with data link communications. The communication facilities shall be provided with utomatic recording.

(d) The communication facilities in c) should permit communications to be established normally within fifteen seconds.

(ii) Adjacent ATS units should be connected in all cases where special circumstances exist. Special circumstances may be due to traffic density, types of aircraft operations and/or the manner in which the airspace is organized and may exist even if the control areas and/or control zones are not contiguous or have not (yet) been established.

(iii) Wherever local conditions are such that it is necessary to clear aircraft into an adjacent control area prior to departure, an approach control unit and/or aerodrome control tower should be connected with the area control centre serving the adjacent area.
(iv) The communication facilities in paragraph (ii) and (iii) should include provisions for communications by direct speech alone, or in combination with data link communications, with automatic recording, whereby for the purpose of transfer of control using radar, ADS-B or ADS-C data, the communications can be established instantaneously and for other purposes the communications can normally be established within fifteen seconds.

(v) In all cases where automatic exchange of data between air traffic services computers is required, suitable facilities for automatic recording shall be provided.

(vi) Recordings of data and communications as required in paragraph (v) shall be retained for a period of at least thirty days.

d) Procedures for direct-speech communications

Appropriate procedures for direct-speech communications should be developed to permit immediate connections to be made for very urgent calls concerning the safety of aircraft, and the interruption, if necessary, of less urgent calls in progress at the time.

3) Surface movement control service

a) Communications for the control of vehicles other than aircraft on manoeuvring areas at controlled aerodromes

(i) Two-way radiotelephony communication facilities shall be provided for aerodrome control service for the control of vehicles on the manoeuvring area, except where communication by a system of visual signals is deemed to be adequate.

(ii) Where conditions warrant, separate communication channels shall be provided for the control of vehicles on the manoeuvring area. Automatic recording facilities shall be provided on all such channels.

(iii) Recordings of communications as required in paragraph (ii) shall be retained for a period of at least thirty days. See also ICAO Annex 10, Volume II, 3.5.1.5.

4) Aeronautical radio navigation service

a) Automatic recording of surveillance data

(i) Surveillance data from primary and secondary radar equipment or other systems (e.g. ADS-B, ADS-C), used as an aid to air traffic services, shall be automatically recorded for use in
accident and incident investigations, search and rescue, air traffic control and surveillance systems evaluation and training.

(ii) Automatic recordings shall be retained for a period of at least thirty days. When the recordings are pertinent to accident and incident investigations, they shall be retained for longer periods until it is evident that they will no longer be required.
Sub Part 170.F - AIR TRAFFIC SERVICES REQUIREMENTS FOR INFORMATION

170.053 Meteorological information

1) General

a) Air traffic services units shall be supplied with up-to-date information on existing and forecast meteorological conditions as necessary for the performance of their respective functions. The information shall be supplied in such a form as to require a minimum of interpretation on the part of air traffic services personnel and with a frequency which satisfies the requirements of the air traffic services units concerned.

b) Air traffic services units should be supplied with available detailed information on the location, vertical extent, direction and rate of movement of meteorological phenomena in the vicinity of the aerodrome, and particularly in the climb-out and approach areas, which could be hazardous to aircraft operations.

c) When computer-processed upper air data are made available to air traffic services units in digital form for use by air traffic services computers, the contents, format and transmission arrangements should be as agreed between the Meteorological Authority and the appropriate ATS Authority.

2) Flight information centres and area control centres;

a) Flight information centres and area control centres shall be supplied with meteorological information as described in Annex 3, Appendix 9, 1.3, particular emphasis being given to the occurrence or expected occurrence of weather deterioration as soon as this can be determined. These reports and forecasts shall cover the flight information region or control area and such other areas as may be determined on the basis of regional air navigation agreements.

b) Flight information centres and area control centres shall be provided, at suitable intervals, with current pressure data for setting altimeters, for locations specified by the flight information centre or area control centre concerned.

3) Units providing approach control service

a) Units providing approach control service shall be supplied with meteorological information as described in Annex 3, Appendix 9, 1.2 for the airspace and the aerodromes with which they are concerned. Special reports and amendments to forecasts shall be communicated to the units providing approach control service as soon as they are
necessary in accordance with established criteria, without waiting for the next routine report or forecast. Where multiple anemometers are used, the indicators to which they are related shall be clearly marked to identify the runway and section of the runway monitored by each anemometer.

b) Units providing approach control service shall be provided with current pressure data for setting altimeters, for locations specified by the unit providing approach control service.

c) Units providing approach control service for final approach, landing and take-off shall be equipped with surface wind display(s). The display(s) shall be related to the same location(s) of observation and be fed from the same sensor(s) as the corresponding display(s) in the aerodrome control tower and in the meteorological station, where such a station exists.

d) Units providing approach control service for final approach, landing and take-off at aerodromes where runway visual range values are assessed by instrumental means shall be equipped with display(s) permitting read-out of the current runway visual range value(s). The display(s) shall be related to the same location(s) of observation and be fed from the same sensor(s) as the corresponding displays in the aerodrome control tower and in the meteorological station, where such a station exists.

e) Units providing approach control service for final approach, landing and take-off at aerodromes where the height of cloud base is assessed by instrumental means should be equipped with display(s) permitting read-out of the current value(s) of the height of cloud base. The displays should be related to the same location(s) of observations and be fed from the same sensor(s) as the corresponding display(s) in the aerodrome control tower and in the meteorological station, where such a station exists.

f) Units providing approach control service for final approach, landing and take-off shall be supplied with information on wind shear which could adversely affect aircraft on the approach or take-off paths or during circling approach.

4) Aerodrome control towers

a) Aerodrome control towers shall be supplied with meteorological information as described in Annex 3, Appendix 9, 1.1 for the aerodrome with which they are concerned. Special reports and amendments to forecasts shall be communicated to the aerodrome control towers as soon as they are necessary in accordance with established criteria, without waiting for the next routine report or forecast.
b) Aerodrome control towers shall be provided with current pressure data for setting altimeters for the aerodrome concerned.

c) Aerodrome control towers shall be equipped with surface wind display(s). The display(s) shall be related to the same location(s) of observation and be fed from the same sensor(s) as the corresponding display(s) in the meteorological station, where such a station exists. Where multiple sensor(s) are used, the displays to which they are related shall be clearly marked to identify the runway and section of the runway monitored by each sensor.

d) Aerodrome control towers at aerodromes where runway visual range values are measured by instrumental means shall be equipped with display(s) permitting read-out of the current runway visual range value(s). The display(s) shall be related to the same location(s) of observation and be fed from the same sensor(s) as the corresponding display(s) in the meteorological station, where such a station exists.

e) Aerodrome control towers at aerodromes where the height of cloud base is assessed by instrumental means should be equipped with display(s) permitting read-out of the current value(s) of the height of cloud base. The displays should be related to the same location(s) of observations and be fed from the same sensor(s) as the corresponding display(s) in the meteorological station, where such a station exists.

f) Aerodrome control towers shall be supplied with information on wind shear which could adversely affect aircraft on the approach or take-off paths or during circling approach and aircraft on the runway during the landing roll or take-off run.

g) Aerodrome control towers and/or other appropriate units should be supplied with aerodrome warnings.

5) Communication stations Where necessary for flight information purposes, current meteorological reports and forecasts shall be supplied to communication stations. A copy of such information shall be forwarded to the flight information centre or the area control centre.

170.054 Formation on aerodrome conditions and the operational status of associated facilities

Aerodrome control towers and units providing approach control service shall be kept currently informed of the operationally significant conditions of the movement area, including the existence of temporary hazards, and the operational status of any associated facilities at the aerodrome(s) with which they are concerned.
170.055 Information on the operational status of navigation aids

1) ATS units shall be kept currently informed of the operational status of non-visual navigation aids, and those visual aids essential for take-off, departure, approach and landing procedures within their area of responsibility and those visual and non-visual aids essential for surface movement.

2) Information on the operational status, and any changes thereto, of visual and nonvisual aids as referred to in 7.3.1 should be received by the appropriate ATS unit(s) on a timely basis consistent with the use of the aid(s) involved.

170.056 Information on unmanned free balloons

Operators of unmanned free balloons shall keep the appropriate air traffic services units informed of details of flights of unmanned free balloons in accordance with the provisions contained in Annex 2.

170.057 Information concerning volcanic activity

1) ATS units shall be informed, in accordance with local agreement, of pre-eruption volcanic activity, volcanic eruptions and volcanic ash cloud which could affect airspace used by flights within their area of responsibility.

2) Area control centres and flight information centres shall be provided with volcanic ash advisory information issued by the associated VAAC.

170.058 Information concerning radioactive materials and toxic chemical “clouds”

ATS units shall be informed, in accordance with local agreement, of the release into the atmosphere of radioactive materials or toxic chemicals which could affect airspace used by flights within their area of responsibility.
Sub Part 170.G - Air Traffic Services Facility

170.059 General

Air traffic services (ATS) facilities form part of the public service institutions provided by governments, their level of functional suitability, convenience and comfort must correspond to that which governs public service institutions in general. It is, however, also a fact that this level varies considerably from State to State or even within States, depending not only on the specific economic situation, but also on climatological conditions, acquired habits and tradition.

170.060 Ground based navigation, surveillance and equipment and communication equipment.

1) To function properly, an air traffic control (ATC) system requires various items of equipment. Types and quantities of this equipment will vary with the properly justified demands on the particular system.

2) Equipment elements should generally be installed in stages and in proportion to the increase in demand(s) imposed on the air traffic services (ATS). Such phasing has the advantage of reducing the immediate economic burden imposed on administrations by spreading system establishment or expansion costs over a longer time. It also reduces the critical effect of time on personnel recruitment, selection and training necessary for equipment installation, maintenance and operation.

3) Activities, materials and other elements which are associated with hidden costs may include: site survey; site acquisition; site preparation; preparation of equipment specification; contract negotiation; equipment inspection(s) before technical acceptance; installation; system evaluation (operational acceptance) including flight inspection costs for aircraft and crew; ancillary monitor equipment; standby equipment and/or fail-safe or fail-soft provisions; spare parts inventory or suitable alternative(s) such as rapid, reliable replacement from a centralized source; special tools required for maintenance of that equipment; training for operations and maintenance personnel; manuals of the operation and maintenance of the equipment.

4) Major type of equipment associated with ATC service include: very high frequency omni-directional range (VOR); non-directional radio beacon (NDB); long-range radio navigation aids; communication equipment; primary and secondary radar; radar presentation (display) equipment; automated systems; instrument landing system (ILS); very high frequency direction-finding (VDF).

170.061 ATS Operational Requirements
1) At all ATS units, the controller must be provided with a suitable
environment and appropriate equipment.

2) The environment should be safe and comfortable and should afford
protection from the elements as well as adequate heating, ventilation and,
where required by climatologically conditions, air-conditioning. Operating
space should be

3) Operating space should be ample without being spacious. Controllers
should be able to work at their positions without physical discomfort, e.g.
chairs should be strong and comfortable while providing proper back
support be adjustable in height, and easily movable.

4) The environment should be sufficiently free from noise so as to be
conducive to mental concentration.

5) Appropriate equipment includes those items which enhance the
controller’s ability to see and to communicate with aircraft, his colleagues,
other ATS units, maintenance personnel, other aviation agencies or bodies,
e.g. airlines or military authorities and supporting services such as
meteorological (MET), aeronautical information service (AIS), etc. Typical
items in this respect are lighting facilities, radio and telephone.

170.062 ATS Structural Requirements

1) Special buildings or those parts of other buildings used by ATS should be
designed specifically for the particular needs of the ATS unit concerned.

2) The buildings should be sufficiently durable to last for the expected life of
the facility they are to house and should be capable of accommodating all
personnel, materials and visitors expected to occupy the structure.
Additionally, each level should be strong enough to support all equipment
and people expected to use that level. The structure should be fireproof.

3) The initial design should make allowance for flexibility in accommodating
occasional relocations of control positions and/or radio or telephone lines.
There should also be similar expansion capability in order to accommodate
additional or new, operational or administrative equipment.

4) Sufficient dedicated power (and outlets) should be provided for all existent
and anticipated equipment (radar, data automation, etc.), lighting, heating,
ventilation, etc. Critical items of equipment, including radio and telephone
equipment, should be connected to an uninterruptible power supply, a
back-up power generator, and/or two independent power sources.

5) Where necessary for the exercise of control function, windows must be
provided. In all cases, windows should be provided whenever feasible in
order to create a normal working environment.
6) In tall structures, a dual-purpose elevator should be included to be used by personnel and for freight lifting purposes. Space allocated for each function or item of equipment should be ample with reasonable allowance for expansion.

7) There should be provisions for emergency exits from all personnel areas. In addition, buildings should be provided with lightning protection, emergency lighting, fire alarm and extinguishing systems and security systems.

170.063 ATS Accommodations

Further to the space required for the operations area, buildings serving ATS units should provide for a briefing room, administrative offices, equipment repair space, locker rooms, administrative supplies storage, technical equipment storage, lounge facilities with cooking facilities, toilet facilities, running water (where possible cold and hot), cold drinking water (if the normal running water is not suitable for drinking), outside lighting and a vehicle parking area.

170.064 ATS Security Measures

1) Security measures and procedures will be required to ensure effective control of entry into all areas where air traffic control (ATC) operations are conducted. They must cause a minimum of delay and inconvenience to persons who regularly need access to the secured areas.

2) These requirements apply equally to self-contained ATS buildings as well as to an ATS operations area within a multi-tenant building. In such a building control of access only to the portion occupied by ATS may be required.

3) Security measures can vary from posting security guards at access points, to the installation of closed-circuit television monitors and/or the security locks operated by special keys or coded cards.

170.065 Advanced ATS Systems

1) Apart from adequate and reliable ground-ground and air-ground communications, an air traffic control (ATC) unit applying conventional control methods has comparatively few requirements for additional means and equipment.

2) Experience has shown that if controllers received adequate training and the social and working conditions are reasonably satisfactory, an ATC unit will be able to handle appreciable amounts of air traffic before it will be necessary to introduce advanced air traffic services (ATS) systems.
Sub Part 170.H - Air Traffic Services Incident Reporting and Investigation

170.066 General

1) The state of occurrence shall take all reasonable measure to protect the evidence and to maintain safe custody of the aircraft and its contents for such a period as may be necessary for the purpose of an investigation;

2) A Serious occurrence involving air traffic such as an aircraft proximity (AIRPROX) or a serious difficulty caused by faulty procedures, or the lack of compliance with applicable procedures or the failure of ground facility resulting in hazard to aircraft shall be investigated;

3) Reporting of air traffic incidents and ATS investigating procedures should be established in order to ensure safety and high standards in the conduct and control of air traffic.

170.067 Reporting Procedure

1) Air traffic incidents are identified and designated in reports as follows:

   a) Type of air traffic incident:

      (i) aircraft proximity;
      (ii) serious difficulty caused by faulty procedures or lack of compliance with applicability procedures;
      (iii) serious difficulty caused by failure or ground;
      (iv) operational error;
      (v) operational deviation.

   b) Designation of incident:

      (i) AIRPROX;
      (ii) procedural;
      (iii) facility;
      (iv) operational error;
      (v) operational deviation.

2) Reporting by pilots

A pilot involved in an incident shall proceed as follows:

   a) during flight, use the appropriate air-ground frequency for reporting an incident of major significance, particularly if it involves other aircraft, so as to permit the facts to be ascertained immediately;

   b) as promptly as possible after landing submit a completed air traffic incident report form:
(i) for confirming a report of an incident made initially in accordance with a) above, or for making the initial report on such an incident if it had not been possible to report it by radio; and
(ii) for reporting an incident which did not require immediate notification at the time of occurrence.

c) An initial report made by radio should contain the following information:

(i) aircraft identification;
(ii) type of incident (AIRPROX, PROCEDURE, FACILITY, etc);
(iii) date/time and position of incident (UTC);
(iv) heading and route, true air speed, level and altimeter setting, climbing, descending or level flight;
(v) any avoiding action taken;
(vi) the other aircraft type and call sign or, if not known, description;
(vii) the other aircraft climbing, descending or level flight;
(viii) avoiding action taken by the other aircraft;
(ix) distance to other aircraft;
(x) aerodrome of first landing and aerodrome of destination.

d) The air traffic incident report form initially reported by radio should be submitted by the pilot to the ATS reporting office of the aerodrome of first landing. The pilot shall complete paragraph 7.2.2.2. supplementing the details of the radio report as necessary.

*Note:*—*where there is no ATS reporting office, the report may be submitted to any other ATS unit.*

3) Reporting by Air Traffic Services (ATS)

a) Following an air traffic incident the ATC unit involved shall proceed as follows:

(i) identify and designate the incident in accordance with the procedure detailed in paragraph 7.2.1.
(ii) if the aircraft is bound for a destination located within the area of responsibility of the ATS unit in whose area the incident occurred, arrangements shall be made with the operator to obtain the pilot’s report on landing;
(iii) if the aircraft is bound for a domestic destination, the ATS unit of destination shall be requested to obtain the pilot’s report on landing;
(iv) if the aircraft is bound for an international destination, the ATS authority at destination aerodrome shall be notified and given full details of the incident (by AFTN) and requested to obtain the pilot’s report;
(v) the civil aviation authority of the state of registry and the state of the operator shall be notified of the incident by the state of occurrence (by AFTN) together with all available details;
(vi) if the incident involves another aircraft, similar action shall taken in regard to both parties;
(vii) complete the air traffic incident form;
(viii) ensure that the accident/incident authority and the national ATS authority are notified of all reportable incidents.

b) The ATS incident report form initially reported by radio, telephone or teleprinter shall submitted by the controller to the ATS unit.

170.068 Investigation and Documentation

1) Immediately following an air traffic incident all documents and recording relating to the incident shall be impounded. Controllers, supervisors and officers-in-charge of the ATS unit concerned shall take all necessary measures to preserve relevant documents and to record as many details as possible while they are still fresh in their minds.

2) The initial ATS investigation is normally carried out by the ATS unit to which the incident has been reported or which noted it. The ATS unit shall obtain the following information:

a) statements by personnel envolved;
b) transcripts of relevant recording of radio and telephone communications;
c) copies of flight progress strips and other relevant data, including recorded radar data, if available;
d) copies of the meteorological reports and forecasts relevant to the time of the incident;
e) technical statements concerning the operating status of equipment; and
f) unit findings and recommendations for corrective actions, if appropriate.

3) To give effect to the air traffic incident investigation process, an investigating team shall be established.

a) The team should include a senior officer DGCA as team leader, the officer-in-charge of the ATS unit, a senior ATS officer, or the ATS QA officer/specialist, ATS experts, other specialist officers from flight operations, flight calibration, telecommunications engineering or other fields, as required.

b) In addition and when necessary, the controller(s) involved in the incident shall given the opportunity to nominate as a member of the team an experienced controller to represent him/her during the investigation.
c) When two units are involved, the unit in whose area the incident has taken place should initiate action to convene the incident investigation team and invite the other unit to participate.

4) The proceedings of an air traffic investigating team, as well as papers records used by it should be treated as confidential material. Specific *prima facie* facts required by the team shall prepared by the unit and shall include, as appropriate:

a) names and operating positions of ATS personnel involved;
b) full details of the sequence of events in narrative form;
c) names of pilots and operators, and details of aircraft involved;
d) reports from controllers involved as prepared before leaving the unit on the day of the occurrence;
e) reports from pilots involved, if necessary, through the operator's office; and
f) relevant voice recordings, flight progress strips and other flight data, including recorded radar data if available.

5) The report of the ATS investigating team shall include a summary of the incident and the cause.

a) The report shall contain all relevant information, in chronological sequence where appropriate, and conclude with a list of findings, conclusions, causes and safety recommendations for the purpose of accident/incident prevention.

*Note: Recommended corrective action shall included in the report.*

b) The fundamental objective of the investigation is prevention of accidents, not to apportion blame or liability.

*Note: The team shall not make recommendation on personnel or disciplinary action in the event of controller error because the fundamental objective of the investigation is prevention of accidents, not to apportion blame or liability.*

c) In addition, the following information shall submitted as appendices to the report:

(i) statements by personnel involved;
(ii) transcripts of relevant recordings of air-ground and ground-ground communications;
(iii) copies of meteorological reports or forecasts relevant to the incident;
(iv) copies of flight progress strips and other data relevant to the incident, including recorded radar data, if available; and
(v) any technical statements concerning the operating status of equipment.

6) On completion of the investigation, full details of the findings shall sent through appropriate channels to the operator and the civil aviation authority of the State of the operator.

MINISTER FOR TRANSPORTATION

ttd

Ir. JUSMAN SYAFII DJAMAL

Salinan sesuai dengan aslinya
Kepala Biro Hukum dan KSLN

UMAR ARIS, SH, MM, MH
Pembina Tk. I (IV/b)
APPENDIX 1. PRINCIPLES GOVERNING THE IDENTIFICATION OF RNP TYPES 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 (Doc 9426).

1. Designators for ATS routes and RNP types

1.1 The purpose of a system of route designators and required navigation performance (RNP) type(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.— Prior to the global introduction of RNP, all references in this appendix to RNP also apply to area navigation (RNAV) routes, where navigation performance accuracy requirements have been specified.

Note 2.— Specifications governing the publication of RNP types are given in Annex 4, Chapter 7, and Annex 15, Appendix 1.

Note 3.— In relation to this appendix and for flight planning purposes, a prescribed RNP type 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 should, 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.

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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 authority 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 or the turn performance required on the route in question in accordance with the following:

a) for RNP 1 routes at and above FL 200, the letter Y to indicate that all turns on the route between 30 and 90 degrees shall be made within the allowable RNP tolerance of a tangential arc between the straight leg segments defined with a radius of 22.5 NM (e.g. A123Y[1]);

b) for RNP 1 routes at and below FL 190, the letter Z to indicate that all turns on the route between 30 and 90 degrees shall be made within the allowable RNP tolerance of a tangential arc between the straight leg segments defined with a radius of 15 NM (e.g. G246Z[1]);

c) the letter F to indicate that on the route or portion thereof advisory service only is provided;

d) 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”, “G”, “Y” or “Z” 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 Annexes 4 and 15.

Note 3.— The conditions under which States may specify the controlled turn performance referred to in 2.4 a) and b) are discussed in the Manual on Required Navigation Performance (RNP) (Doc 9613).

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, States 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 States’ 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", "G", "Y" or "Z" specified in 2.4 above are used, the flight crew should 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 should, whenever possible, be established with reference to ground-based radio navigation aids, preferably VHF or higher frequency aids.

1.2 Where such ground-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 should, 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 1100 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 States’ 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, the significant point shall be designated by a unique five-letter pronounceable “name-code”. This name-code designator then serves as the name as well as the coded designator of the significant point.

3.2 This name-code designator shall be selected so as to avoid any difficulties in pronunciation by pilots or ATS personnel.
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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 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 a State wishes to keep the allocation of specific name-codes for re-use at a different location, such name-codes shall not be used until after a period of at least six months.

3.5 States’ requirements for name-code designators shall be notified to the Regional Offices of ICAO for coordination.

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:

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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 to a minimum;
b) the availability of a radio navigation aid at a location should not necessarily determine its designation as a compulsory reporting point;
c) compulsory reporting points should 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 should not systematically be made mandatory for all flights in all circumstances. In applying this principle, particular attention shall be given to the following:

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a) high-speed, high-flying aircraft should not be required to make routine position reports over all reporting points established as compulsory for low-speed, low-flying aircraft;

b) aircraft transiting through a terminal control area should 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

(See Chapter 2, 2.12.3)

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

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 the 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.
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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

b) Coded designator: KODAP 2 A

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 ADOLA.

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.

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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 4.

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

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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 new 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 3. TABLES OF CRUISING LEVELS

The cruising levels to be observed when so required by this Annex are as follows:

a) in areas where, on the basis of regional air navigation agreements and in accordance with conditions specified therein, a vertical separation minimum (VSM) of 300 m (1 000 ft) is applied between FL 290 and FL 410 inclusive.*

| TRACK** |
|------------------|------------------|------------------|------------------|------------------|
| | From 000 degrees to 179 degrees*** | From 180 degrees to 359 degrees*** |
| IFR Flights | VFR Flights | IFR Flights | VFR Flights |
| FL | Altitude Metres | FL | Altitude Metres | FL | Altitude Metres | FL | Altitude Metres |
| -90 | - | - | - | - | - | - | - |
| 10 | 300 | 1 000 | 30 | 1 050 | 3 500 | 40 | 1 200 | 4 000 |
| 30 | 900 | 3 000 | 55 | 1 700 | 5 500 | 60 | 1 850 | 6 000 |
| 50 | 1 500 | 5 000 | 75 | 2 300 | 7 500 | 80 | 2 450 | 8 000 |
| 70 | 2 150 | 7 000 | 95 | 2 900 | 9 500 | 100 | 3 050 | 10 000 |
| 90 | 2 750 | 9 000 | | | | | | |

* Except when, on the basis of regional air navigation agreements, a modified table of cruising levels based on a nominal vertical separation minimum of 300 m (1 000 ft) is prescribed for use, under specified conditions, by aircraft operating above FL 410 within designated portions of the airspace.

** Magnetic track, or in polar areas at latitudes higher than 70 degrees and within such extensions to those areas as may be prescribed by the appropriate ATS authorities, grid tracks as determined by a network of lines parallel to the Greenwich Meridian superimposed on a polar stereographic chart in which the direction towards the North Pole is employed as the Grid North.

*** Except where, on the basis of regional air navigation agreements, from 090 to 269 degrees and from 270 to 089 degrees is prescribed to accommodate predominant traffic directions and appropriate transition procedures to be associated therewith are specified.

Note.—Guidance material relating to vertical separation is contained in the Manual on Implementation of a 300 m (1 000 ft) Vertical Separation Minimum Between FL 290 and FL 410 Inclusive (Doc 9374).

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### Annex 2 — Rules of the Air

#### b) in other areas:

<table>
<thead>
<tr>
<th>TRACK*</th>
<th>From 000 degrees to 179 degrees**</th>
<th>From 180 degrees to 359 degrees**</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>IFR Flights</td>
<td>VFR Flights</td>
</tr>
<tr>
<td></td>
<td>FL</td>
<td>Altitude (Metres)</td>
</tr>
<tr>
<td>-90</td>
<td>10</td>
<td>300</td>
</tr>
<tr>
<td></td>
<td>30</td>
<td>900</td>
</tr>
<tr>
<td></td>
<td>50</td>
<td>1500</td>
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<td></td>
<td>70</td>
<td>2150</td>
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<td>90</td>
<td>2750</td>
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<td>150</td>
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<td>5750</td>
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<td></td>
<td>210</td>
<td>6350</td>
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<tr>
<td></td>
<td>230</td>
<td>7000</td>
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<td></td>
<td>250</td>
<td>7600</td>
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<td></td>
<td>270</td>
<td>8250</td>
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<td>290</td>
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<td>10050</td>
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<td>370</td>
<td>11000</td>
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<td></td>
<td>410</td>
<td>12050</td>
</tr>
<tr>
<td></td>
<td>450</td>
<td>13700</td>
</tr>
<tr>
<td></td>
<td>490</td>
<td>14900</td>
</tr>
</tbody>
</table>

* Magnetic track, or in polar areas at latitudes higher than 70 degrees and within such extensions to those areas as may be prescribed by the appropriate ATS authorities, grid tracks as determined by a network of lines parallel to the Greenwich Meridian superimposed on a polar stereographic chart in which the direction towards the North Pole is employed as the Grid North.

** Except where, on the basis of regional air navigation agreements, from 090 to 269 degrees and from 270 to 089 degrees is prescribed to accommodate predominant traffic directions and appropriate transition procedures to be associated therewith are specified.

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

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**APPENDIX 4. ATS AIRSPACE CLASSES — SERVICES PROVIDED AND FLIGHT REQUIREMENTS**

*(Chapter 2, 2.6 refers)*

<table>
<thead>
<tr>
<th>Class</th>
<th>Type of flight</th>
<th>Separation provided</th>
<th>Service provided</th>
<th>Speed limitation*</th>
<th>Radio communication requirement</th>
<th>Subject to an ATC clearance</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>IFR only</td>
<td>All aircraft</td>
<td>Air traffic control service</td>
<td>Not applicable</td>
<td>Continuous two-way</td>
<td>Yes</td>
</tr>
<tr>
<td>B</td>
<td>IFR</td>
<td>All aircraft</td>
<td>Air traffic control service</td>
<td>Not applicable</td>
<td>Continuous two-way</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>VFR</td>
<td>All aircraft</td>
<td>Air traffic control service</td>
<td>Not applicable</td>
<td>Continuous two-way</td>
<td>Yes</td>
</tr>
<tr>
<td>C</td>
<td>IFR</td>
<td>IFR from IFR</td>
<td>Air traffic control service</td>
<td>Not applicable</td>
<td>Continuous two-way</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>IFR from VFR</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>VFR</td>
<td>VFR from IFR</td>
<td>1) Air traffic control service for separation from IFR, 2) VFR/AIR traffic information (and traffic avoidance advice on request)</td>
<td>250 kt IAS below 3 050 m (10 000 ft) AMSL</td>
<td>Continuous two-way</td>
<td>Yes</td>
</tr>
<tr>
<td>D</td>
<td>IFR</td>
<td>IFR from IFR</td>
<td>Air traffic control service, traffic information about VFR flights (and traffic avoidance advice on request)</td>
<td>250 kt IAS below 3 050 m (10 000 ft) AMSL</td>
<td>Continuous two-way</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>VFR</td>
<td>Nil</td>
<td>IFR/AIR and VFR/AIR traffic information (and traffic avoidance advice on request)</td>
<td>250 kt IAS below 3 050 m (10 000 ft) AMSL</td>
<td>Continuous two-way</td>
<td>Yes</td>
</tr>
<tr>
<td>E</td>
<td>IFR</td>
<td>IFR from IFR</td>
<td>Air traffic control service and, as far as practical, traffic information about VFR flights</td>
<td>250 kt IAS below 3 050 m (10 000 ft) AMSL</td>
<td>Continuous two-way</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>VFR</td>
<td>Nil</td>
<td>Traffic information as far as practical</td>
<td>250 kt IAS below 3 050 m (10 000 ft) AMSL</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>F</td>
<td>IFR</td>
<td>IFR from IFR as far as practical</td>
<td>Air traffic advisory service; flight information service</td>
<td>250 kt IAS below 3 050 m (10 000 ft) AMSL</td>
<td>Continuous two-way</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>VFR</td>
<td>Nil</td>
<td>Flight information service</td>
<td>250 kt IAS below 3 050 m (10 000 ft) AMSL</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>G</td>
<td>IFR</td>
<td>Nil</td>
<td>Flight information service</td>
<td>250 kt IAS below 3 050 m (10 000 ft) AMSL</td>
<td>Continuous two-way</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>VFR</td>
<td>Nil</td>
<td>Flight information service</td>
<td>250 kt IAS below 3 050 m (10 000 ft) AMSL</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

* 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. AERONAUTICAL DATA QUALITY REQUIREMENTS

#### Table 1. Latitude and longitude

<table>
<thead>
<tr>
<th>Latitude and longitude</th>
<th>Accuracy Data type</th>
<th>Integrity Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flight information region boundary points</td>
<td>2 km declared</td>
<td>$1 \times 10^{-3}$ routine</td>
</tr>
<tr>
<td>P, R, D area boundary points (outside CTA/CTZ boundaries)</td>
<td>2 km declared</td>
<td>$1 \times 10^{-3}$ routine</td>
</tr>
<tr>
<td>P, R, D area boundary points (inside CTA/CTZ boundaries)</td>
<td>100 m calculated</td>
<td>$1 \times 10^{-5}$ essential</td>
</tr>
<tr>
<td>CTA/CTZ boundary points</td>
<td>100 m calculated</td>
<td>$1 \times 10^{-5}$ essential</td>
</tr>
<tr>
<td>En-route nav aids and fixes, holding, STAR/SID points</td>
<td>100 m surveyed/calculated</td>
<td>$1 \times 10^{-5}$ essential</td>
</tr>
<tr>
<td>Obstacles in Area 1 (the entire State territory)</td>
<td>50 m surveyed</td>
<td>$1 \times 10^{-3}$ routine</td>
</tr>
<tr>
<td>Obstacles in Area 2 (the part outside the aerodrome/heliport boundary)</td>
<td>5 m surveyed</td>
<td>$1 \times 10^{-5}$ essential</td>
</tr>
<tr>
<td>Final approach fixes/points and other essential fixes/points comprising the instrument approach procedure</td>
<td>3 m surveyed/calculated</td>
<td>$1 \times 10^{-5}$ essential</td>
</tr>
</tbody>
</table>

**Note 1.** See Annex 15, Appendix 8, for graphical illustrations of obstacle data collection surfaces and criteria used to identify obstacles in the defined areas.

**Note 2.** In those portions of Area 2 where flight operations are prohibited due to very high terrain or other local restrictions and/or regulations, obstacle data are to be collected in accordance with the Area 1 numerical requirements specified in Annex 15, Appendix 8, Table A8-2.

**Note 3.** Implementation of Annex 15 provisions 10.6.1.1 and 10.6.1.2 concerning the availability, as of 20 November 2008 and 18 November 2010, of obstacle data according to Area 1 and Area 2 specifications, respectively, would be facilitated by appropriate advance planning for the collection and processing of such data.
### Table 2. Elevation/altitude/height

<table>
<thead>
<tr>
<th>Elevation/altitude/height</th>
<th>Accuracy Data type</th>
<th>Integrity Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Threshold crossing height, precision approaches</td>
<td>0.5 m</td>
<td>$1 \times 10^{-4}$</td>
</tr>
<tr>
<td></td>
<td>calculated</td>
<td>critical</td>
</tr>
<tr>
<td>Obstacle clearance altitude/height (OCA/H)</td>
<td>as specified in PANS-OPS (Doc 8168)</td>
<td>$1 \times 10^{-5}$</td>
</tr>
<tr>
<td></td>
<td></td>
<td>essential</td>
</tr>
<tr>
<td>Obstacles in Area 1 (the entire State territory), elevations</td>
<td>30 m</td>
<td>$1 \times 10^{-3}$</td>
</tr>
<tr>
<td></td>
<td>surveyed</td>
<td>routine</td>
</tr>
<tr>
<td>Obstacles in Area 2 (the part outside the aerodrome/heliport boundary)</td>
<td>3 m</td>
<td>$1 \times 10^{-5}$</td>
</tr>
<tr>
<td></td>
<td>surveyed</td>
<td>essential</td>
</tr>
<tr>
<td>Distance measuring equipment (DME), elevation</td>
<td>30 m (100 ft)</td>
<td>$1 \times 10^{-5}$</td>
</tr>
<tr>
<td></td>
<td>surveyed</td>
<td>essential</td>
</tr>
<tr>
<td>Instrument approach procedures altitude</td>
<td>as specified in PANS-OPS (Doc 8168)</td>
<td>$1 \times 10^{-5}$</td>
</tr>
<tr>
<td></td>
<td></td>
<td>essential</td>
</tr>
<tr>
<td>Minimum altitudes</td>
<td>50 m</td>
<td>$1 \times 10^{-3}$</td>
</tr>
<tr>
<td></td>
<td>calculated</td>
<td>routine</td>
</tr>
</tbody>
</table>

**Note 1.**—See Annex 15, Appendix 8, for graphical illustrations of the obstacle data collection surfaces and criteria used to identify obstacles in the defined areas.

**Note 2.**—In those portions of Area 2 where flight operations are prohibited due to very high terrain or other local restrictions and/or regulations, obstacle data are to be collected in accordance with the Area 1 numerical requirements specified in Annex 15, Appendix 8, Table A8-2.

**Note 3.**—Implementation of Annex 15 provisions 10.6.1.1 and 10.6.1.2 concerning the availability, as of 20 November 2008 and 18 November 2010, of obstacle data according to Area 1 and Area 2 specifications, respectively, would be facilitated by appropriate advance planning for the collection and processing of such data.

### Table 3. Declination and magnetic variation

<table>
<thead>
<tr>
<th>Declination/variation</th>
<th>Accuracy Data type</th>
<th>Integrity Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>VHF NAVAID station declination used for technical line-up</td>
<td>1 degree</td>
<td>$1 \times 10^{-5}$</td>
</tr>
<tr>
<td></td>
<td>surveyed</td>
<td>essential</td>
</tr>
<tr>
<td>NDB NAVAID magnetic variation</td>
<td>1 degree</td>
<td>$1 \times 10^{-3}$</td>
</tr>
<tr>
<td></td>
<td>surveyed</td>
<td>routine</td>
</tr>
</tbody>
</table>
### Table 4. Bearing

<table>
<thead>
<tr>
<th>Bearing</th>
<th>Accuracy Data type</th>
<th>Integrity Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Airway segments</td>
<td>1/10 degree</td>
<td>1 × 10⁻³</td>
</tr>
<tr>
<td></td>
<td>calculated</td>
<td>routine</td>
</tr>
<tr>
<td>En-route and terminal fix formations</td>
<td>1/10 degree</td>
<td>1 × 10⁻³</td>
</tr>
<tr>
<td></td>
<td>calculated</td>
<td>routine</td>
</tr>
<tr>
<td>Terminal arrival/departure route segments</td>
<td>1/10 degree</td>
<td>1 × 10⁻³</td>
</tr>
<tr>
<td></td>
<td>calculated</td>
<td>routine</td>
</tr>
<tr>
<td>Instrument approach procedure fix formations</td>
<td>1/100 degree</td>
<td>1 × 10⁻⁵</td>
</tr>
<tr>
<td></td>
<td>calculated</td>
<td>essential</td>
</tr>
</tbody>
</table>

### Table 5. Length/distance/dimension

<table>
<thead>
<tr>
<th>Length/distance/dimension</th>
<th>Accuracy Data type</th>
<th>Integrity Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Airway segments length</td>
<td>1/10 km</td>
<td>1 × 10⁻³</td>
</tr>
<tr>
<td></td>
<td>calculated</td>
<td>routine</td>
</tr>
<tr>
<td>En-route fix formations distance</td>
<td>1/10 km</td>
<td>1 × 10⁻³</td>
</tr>
<tr>
<td></td>
<td>calculated</td>
<td>routine</td>
</tr>
<tr>
<td>Terminal arrival/departure route segments length</td>
<td>1/100 km</td>
<td>1 × 10⁻⁵</td>
</tr>
<tr>
<td></td>
<td>calculated</td>
<td>essential</td>
</tr>
<tr>
<td>Terminal and instrument approach procedure fix formations distance</td>
<td>1/100 km</td>
<td>1 × 10⁻⁵</td>
</tr>
<tr>
<td></td>
<td>calculated</td>
<td>essential</td>
</tr>
</tbody>
</table>
APPENDIX 9. TECHNICAL SPECIFICATIONS RELATED TO INFORMATION FOR AIR TRAFFIC SERVICES, SEARCH AND RESCUE SERVICES AND AERONAUTICAL INFORMATION SERVICES

(See Chapter 10 of this Annex.)

1. INFORMATION TO BE PROVIDED FOR AIR TRAFFIC SERVICES UNITS

1.1 List of information for the aerodrome control tower

The following meteorological information shall be supplied, as necessary, to an aerodrome control tower by its associated aerodrome meteorological office:

a) local routine and special reports, METAR and SPECI, TAF and trend forecasts and amendments thereto, for the aerodrome concerned;

b) SIGMET and AIRMET information, wind shear warnings and alerts and aerodrome warnings;

c) any additional meteorological information agreed upon locally, such as forecasts of surface wind for the determination of possible runway changes;

d) information received on volcanic ash cloud, for which a SIGMET has not already been issued, as agreed between the meteorological and ATS authorities concerned; and

e) information received on pre-eruption volcanic activity and/or a volcanic eruption as agreed between the meteorological and ATS authorities concerned.

1.2 List of information for the approach control unit

The following meteorological information shall be supplied, as necessary, to an approach control unit by its associated aerodrome meteorological office:

a) local routine and special reports, METAR and SPECI, TAF and trend forecasts and amendments thereto, for the aerodrome(s) with which the approach control unit is concerned;

b) SIGMET and AIRMET information, wind shear warnings and alerts and appropriate special air-reports for the airspace with which the approach control unit is concerned and aerodrome warnings;

c) any additional meteorological information agreed upon locally;

d) information received on volcanic ash cloud, for which a SIGMET has not already been issued, as agreed between the meteorological and ATS authorities concerned; and

e) information received on pre-eruption volcanic activity and/or a volcanic eruption as agreed between the meteorological and ATS authorities concerned.
2. INFORMATION TO BE PROVIDED
FOR SEARCH AND RESCUE SERVICES UNITS

2.1 List of information

Information to be supplied to rescue coordination centres shall include the meteorological conditions that existed in the last known position of a missing aircraft and along the intended route of that aircraft with particular reference to:

- a) significant en-route weather phenomena;
- b) cloud amount and type, particularly cumulonimbus; height indications of bases and tops;
- c) visibility and phenomena reducing visibility;
- d) surface wind and upper wind;
- e) state of ground, in particular, any snow cover or flooding;
- f) sea-surface temperature, state of the sea, ice cover if any and ocean currents, if relevant to the search area; and
- g) sea-level pressure data.

2.2 Information to be provided on request

2.2.1 Recommendation.— On request from the rescue coordination centre, the designated meteorological office should arrange to obtain details of the flight documentation which was supplied to the missing aircraft, together with any amendments to the forecast which were transmitted to the aircraft in flight.

2.2.2 Recommendation.— To facilitate search and rescue operations the designated meteorological office should, on request, supply:

- a) complete and detailed information on the current and forecast meteorological conditions in the search area; and
- b) current and forecast conditions en route, covering flights by search aircraft from and returning to the aerodrome from which the search is being conducted.

2.2.3 Recommendation.— On request from the rescue coordination centre, the designated meteorological office should supply or arrange for the supply of meteorological information required by ships undertaking search and rescue operations.

3. INFORMATION TO BE PROVIDED
FOR AERONAUTICAL INFORMATION SERVICES UNITS

3.1 List of information

The following information shall be supplied, as necessary, to an aeronautical information services unit:

- a) information on meteorological service for international air navigation, intended for inclusion in the aeronautical information publication(s) concerned;
1.3 List of information for the flight information centre

The following meteorological information shall be supplied, as necessary, to a flight information centre or an area control centre by its associated meteorological watch office:

a) METAR and SPECI, including current pressure data for aerodromes and other locations, TAF and trend forecasts and amendments thereto, covering the flight information region or the control area and, if required by the flight information centre or area control centre, covering aerodromes in neighbouring flight information regions, as determined by regional air navigation agreement;

b) forecasts of upper winds, upper-air temperatures and significant en-route weather phenomena and amendments thereto, particularly those which are likely to make operation under visual flight rules impracticable, SIGMET and AIRMET information and appropriate special air-reports for the flight information region or control area and, if determined by regional air navigation agreement and required by the flight information centre or area control centre, for neighbouring flight information regions;

c) any other meteorological information required by the flight information centre or area control centre to meet requests from aircraft in flight; if the information requested is not available in the associated meteorological watch office, that office shall request the assistance of another meteorological office in supplying it;

d) information received on volcanic ash cloud, for which a SIGMET has not already been issued, as agreed between the meteorological and ATS authorities concerned;

e) information received concerning the accidental release of radioactive materials into the atmosphere, as agreed between the meteorological and ATS authorities concerned;

f) tropical cyclone advisory information issued by a TCAC in its area of responsibility;

g) volcanic ash advisory information issued by a VAAC in its area of responsibility; and

h) information received on pre-eruption volcanic activity and/or a volcanic eruption as agreed between the meteorological and ATS authorities concerned.

1.4 Supply of information to aeronautical telecommunications stations

Where necessary for flight information purposes, current meteorological reports and forecasts shall be supplied to designated aeronautical telecommunication stations. A copy of such information shall be forwarded, if required, to the flight information centre or the area control centre.

1.5 Format of information

1.5.1 Recommendation.— Local routine and special reports, METAR and SPECI, TAF and trend forecasts, SIGMET and AIRMET information, upper wind and upper-air temperature forecasts and amendments thereto should be supplied to air traffic services units in the form in which they are prepared, disseminated to other meteorological offices or received from other meteorological offices, unless otherwise agreed locally.

1.5.2 Recommendation.— When computer-processed upper-air data for grid points are made available to air traffic services units in digital form for use by air traffic services computers, the contents, format and transmission arrangements should be as agreed between the meteorological authority and the appropriate ATS authority. The data should normally be supplied as soon as is practicable after the processing of the forecasts has been completed.

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Note.—Details of this information are given in Annex 15, Appendix 1, Part 1, GEN 3.5 and Part 3, AD 2.2, 2.11, 3.2 and 3.11.

b) information necessary for the preparation of NOTAM or ASHTAM including, in particular, information on:

1) the establishment, withdrawal and significant changes in operation of aeronautical meteorological services. This information is required to be provided to the aeronautical information services unit sufficiently in advance of the effective date to permit issuance of NOTAM in compliance with Annex 15, 5.1.1 and 5.1.1.1;

2) the occurrence of volcanic activity; and

Note.—The specific information required is given in Chapter 3, 3.3.2 and Chapter 4, 4.8.

3) accidental release of radioactive materials into the atmosphere, as agreed between the meteorological and appropriate civil aviation authorities concerned; and

Note.—The specific information required is given in Chapter 3, 3.4.2(g).

c) information necessary for the preparation of aeronautical information circulars including, in particular, information on:

1) expected important changes in aeronautical meteorological procedures, services and facilities provided; and

2) effect of certain weather phenomena on aircraft operations.
PERATURAN KESELAMATAN PENERBANGAN SIPIL
(P.K.P.S.)

BAGIAN 170

PERATURAN LALU LINTAS UDARA

REPUBLIK INDONESIA
MENTERI PERHUBUNGAN
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<th>No</th>
<th>Paragraph</th>
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<td>Tujuan Pelayanan Lalu Lintas Udara</td>
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<td>Pembagian Pelayanan Lalu Lintas Udara</td>
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<td>Penentuan Kebutuhan Terhadap Pelayanan Lalu Lintas Udara</td>
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<td>170.005</td>
<td>Penentuan Pembagian Ruang Udara dan Pengendalian Bandara dimana Pelayanan Lalu Lintas Udara akan Diberikan</td>
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SUB PART 170. A – U M U M

170.001 Penetapan Kekuasaan


2. Sebagian ruang udara yang berada di atas lautan atau ruang udara yang tidak dapat dijangkau pelayanan lalu lintas udara harus ditetapkan dalam perjanjian dasar regional navigasi udara. Direktorat Jenderal Perhubungan Udara menerima tanggung jawab untuk memberikan pelayanan lalu lintas udara pada ruang udara dan harus menyusun bentuk pelayanan yang akan disediakan sesuai dengan bagiannya.

3. Jika sudah ditetapkan bahwa pelayanan lalu lintas udara akan diberikan, Direktorat Jenderal Perhubungan Udara menunjuk atau mendelegasikan tanggung jawab kepada yang berwenang untuk memberikan pelayanan tersebut.

170.002 Tujuan Pelayanan Lalu Lintas Udara

Tujuan dari pelayanan lalu lintas udara:

1. Mencegah Tabrakan antar pesawat.

2. Mencegah Tabrakan antar pesawat di area pergerakan rintangan di area tersebut.


4. Memberikan saran dan informasi yang berguna untuk keselamatan dan efisiensi pengaturan lalu lintas udara.

5. Memberitahuaken kepada organisasi yang berwenang dalam pencarian pesawat yang memerlukan pencarian dan pertolongan sesuai dengan organisasi yang di persyaratkan.

170.003 Pembagian Pelayanan Lalu Lintas Udara

1. Pelayanan lalu lintas udara harus meliputi 3 (tiga) pelayanan antara lain:
a. Pelayanan pengendalian lalu lintas udara, melaksanakan butir 1, 2 dan 3 pada paragraf 170.002, pelayanan ini terbagi menjadi tiga bagian yaitu:

1) *area control services*: Pelayanan lalu lintas udara yang melayani penerbangan jelajah, kecuali penerbangan yang disebutkan dalam a 2) dan 3), untuk mencapai tujuan 1 dan 3 dalam paragraf 170.002;

2) *approach control services*: Pelayanan lalu lintas udara yang melayani penerbangan keberangkatan dan kedatangan untuk mencapai tujuan 1 dan 3 dalam paragraf 170.002;

3) *aerodrome control services*: Pelayanan lalu lintas udara yang melayani penerbangan yang berada dilingkungan sekitar lalu lintas bandara kecuali untuk penerbangan yang dijelaskan pada a, 2), untuk mencapai tujuan 1, 2 dan 3 dalam paragraf 170.002;

b. *flight information services*: Pelayanan lalu lintas udara yang diberikan untuk mencapai tujuan 4 dalam paragraf 170.002.

c. *alerting services*: pelayanan lalu lintas udara yang diberikan untuk mencapai tujuan 5 dalam paragraf 170.002.

170.004 Penentuan Kebutuhan Pelayanan Lalu Lintas Udara

1. Kebutuhan untuk memberikan pelayanan lalu lintas udara harus ditetapkan berdasarkan pertimbangan sebagai berikut:

a. tingkat kesulitan pelayanan lalu lintas udara;

b. tingkat kepadatan pelayanan lalu lintas udara;

c. kondisi Meteorologi;

d. dan faktor-faktor lain yang terkait;

2. Sistem peringatan pencegahan kecelakaan antar pesawat yang terdapat pada pesawat di area yang telah ditentukan tidak harus menjadi salah satu syarat untuk diperlukannya pelayanan lalu lintas udara di wilayah tersebut.
170.005 Penentuan Pembagian Ruang Udara dan Pengendalian Bandara dimana Pelayanan Lalu Lintas Udara akan diberikan

1. Bila pelayanan lalu lintas udara yang diberikan pada ruang udara tertentu atau bandara tertentu telah ditentukan, maka bagian ruang udara atau bandara tersebut yang ditentukan berhubungan dengan pelayanan lalu lintas udara yang akan diberikan.

2. Penentuan bagian ruang udara tertentu atau bandara tertentu sebagai berikut:


b. Control Area dan Control Zone. Bagian dari ruang udara dimana pelayanan lalu lintas udara diberikan untuk penerbangan IFR.

   1) Klasifikasi ruang udara kelas B, C dan D memberikan pelayanan lalu lintas udara untuk penerbangan VFR.

   2) Bila ditentukan, Control Area dan Control Zone adalah bagian dari FIR.

c. Controlled Aerodrome. suatu bandara dimana ditetapkan pelayanan lalu lintas udara diberikan bagi penerbangan di sekitar bandara.

170.006 Klasifikasi Ruang Udara

1. Ruang Udara pelayanan lalu lintas udara diklasifikasikan sebagai berikut:


b. Kelas B: Untuk penerbangan IFR dan VFR, semua penerbangan akan diberikan pelayanan lalu lintas udara dan terpisah antar pesawat lainnya.
C. Kelas C: Untuk penerbangan IFR dan VFR, semua penerbangan akan diberikan pelayanan lalu lintas udara dan penerbangan IFR terpisah antar penerbangan IFR lainnya dan dari penerbangan VFR. Penerbangan VFR terpisah dari penerbangan IFR dan menerima informasi LLU yang berhubungan dengan penerbangan VFR lainnya.

d. Kelas F: Untuk penerbangan IFR dan VFR, semua yang melaksanakan penerbangan IFR menerima pelayanan lalu lintas udara yang diberikan dan semua penerbangan yang menerima pelayanan informasi penerbangan jika diperlukan.

e. Kelas G: Untuk penerbangan IFR dan VFR, yang diijinkan dan menerima pelayanan informasi penerbangan jika diperlukan.

2. Persyaratan untuk penerbangan dalam tiap – tiap kelas ruang udara diperlihatkan dalam CASR part 91.

170.007 **Required Navigation Performance (RNP) untuk Operasional Terbang Lintas**

1. Direktorat Jenderal Perhubungan udara menetapkan tipe RNP di area yang ditunjuk, lintasan atau rute ATS berdasarkan perjanjian navigasi udara regional.

2. Tipe RNP yang telah ditetapkan harus sesuai dengan level komunikasi, navigasi dan pelayanan lalu lintas udara yang disediakan dalam ruang udara tersebut.

170.008 **Required Communication Performance (RCP)**

1. Direktorat Jenderal Perhubungan Udara menetapkan rute RCP berdasarkan perjanjian navigasi udara regional.

2. Tipe RCP yang telah ditetapkan harus sesuai dengan pelayanan lalu lintas udara yang diberikan dalam ruang udara tersebut.

170.009 **Penetapan dan Penunjukan Unit-Unit yang Memberikan Pelayanan Lalu Lintas Udara**

1. Pusat Informasi Penerbangan (Flight Information Centers/FIC) ditujukan untuk pelayanan informasi penerbangan dan pelayanan darurat di dalam FIR, kecuali bertanggung jawab untuk memberikan pelayanan di FIR yang ditujuk untuk pelayanan lalu lintas udara yang memiliki fasilitas yang memadai untuk memenuhi tanggung jawab tersebut.
2. Unit pemanduan lalu lintas udara (Air Traffic Control Unit) didirikan untuk memberikan pelayanan lalu lintas udara, pelayanan informasi penerbangan, dan pelayanan darurat dalam control area, control zone dan control aerodrome.

170.010 Spesifikasi untuk FIR, Control Area dan Control Zone

1. Wilayah Informasi Penerbangan / Flight Information Region (FIR)
   a. Wilayah Informasi Penerbangan adalah batas wilayah yang mencakup semua struktur ruang udara yang dilayani oleh beberapa region.
   b. Wilayah Informasi Penerbangan meliputi seluruh ruang udara yang dibatasi oleh lateral Limit kecuali yang dibatasi oleh Upper FIR.
   c. Dimana Wilayah Informasi Penerbangan dibatasi oleh upper FIR, batas bawah diperuntukkan bagi Upper FIR merupakan batas upper vertical dari FIR dan sejajar dengan Cruising Level pada VFR sesuai Tabel dalam Appendix 3, ICAO, Annex 2 (CASR 91.159)

2 Control Area
   a. Control Area meliputi Airways dan terminal control area yang membatasi meliputi ruang udara yang cukup untuk menampung jalur penerbangan dari penerbangan IFR tersebut atau sebagian yang diperlukan untuk memberikan pelayanan LLU.
   b. Batas bawah dari Control Area adalah dimulai dari ketinggian daratan atau perairan dimana tidak kurang dari 200 meter (700 kaki).
   c. Batas atas dari Control Area dimulai dari:
      1). Pelayanan Lalu Lintas udara tidak diberikan diatas upper limit
      2). Jika Control Area dibawah area upper control dimana upper limit samadengan lower limit dari upper control area.

Pada saat dilaksanakan, upper limit harus sama dengan cruising level pada VFR sesuai tabel dalam Appendix 3, ICAO, Annex 2 (CASR 91.159).
3. **FIR atau Control Area** di ruang udara bagian atas

Dimana ditetapkan untuk membatasi jumlah dari **FIR** dan **Control area** melalui penerbangan yang menggunakan ketinggian harus dioperasikan, suatu FIR atau control area yang sesuai harus dibatasi meliputi ruang udara bagian atas dengan batas lateral dari beberapa FIR bawah dan control area.

4. **Control Zone**

a. Batas lateral dari control zone meliputi paling tidak beberapa ruang udara dimana control area tidak termasuk, meliputi jalur penerbangan IFR kedatangan dan keberangkatan dari bandara yang menggunakan peralatan meteorologi. Pesawat yang terbang disekitar bandara adalah sebagai pesawat kedatangan.

b. Batas lateral dari **Control Zone** adalah sepanjang ± 9,3 KM (5 NM) dari pusat bandara atau bandara yang bersangkutan dari arah dimana pendekatan bisa dilakukan.

c. Jika **control zone** terletak dalam pada batas lateral dari control area, upper limit harus diberlakukan.

d. Jika **control zone** terletak diluar batas lateral dari control area, maka diharuskan memperluas mulai dari permukaan bumi sampai dengan paling tidak batas bawah dari control area, upper limit harus diberikan.

e. Apabila harus memberlakukan batas atas dari upper limit control zone pada level yang lebih tinggi dari pada batas bawah dari control area maka harus berlaku diatasnya atau apabila control zone terletak diluar batas lateral dari control area, batas atas harus diberlakukan pada level yang dapat diidentifikasi oleh pilot. Dimana batas ini diatas 900 Meter (3000 kaki) diatas permukaan laut.

170.011 **Identifikasi ATS Unit Pelayanan Lalu Lintas Udara dan Ruang Udara**

1. Unit **ACC** atau **FIC** adalah di identifikasi menggunakan nama kota
2. Unit **ADC** diidentifikasi menggunakan nama Bandara tersebut
3. Unit Control Zone, Control Area atau FIR didentifikasi dengan nama dimana unit itu melayani atau wilayah tanggung jawabnya.

170.012 Penetapan dan Pengidentifikasi Rute Pelayanan Lalu Lintas Udara (ATS Route)

1. Ketika rute ATS ditetapkan, merupakan sebuah ruang udara yang terbatas sepanjang rute ATS tersebut dan jarak antar rute ATS tersebut harus jelas terpisah.

2. Ketika diperlukan dengan alasan kepadatan dan kompleksitas atau penerbangan local, special rute, Direktorat Jenderal Perhubungan Udara wajib menetapkan untuk penerbangan level rendah seperti helikopter yang beroperasi di helideck di laut, ketika jarak lateral dibuat diingatkan bahwa harus terjangkau dengan alat navigasi.

3. Rute ATS harus diidentifikasi oleh pembuat design.

4. Pembuatan untuk rute pelayanan lalu lintas udara berbeda dengan SID (standar Instrumen Departure) atau STAR (Standar Arrival), sebaiknya diseleksi terlebih dahulu sesuai ketentuan yang mengacu pada Appendix 1, ICAO Annex 11, CASR 171 dan AIP.

5. SID (Standar Instrument Departure) dan STAR (Standar Arrival) dan prosedur terkait harus mengacu kepada Appendix 3, ICAO Annex 11, CASR 171 dan AIP.
   b. Jarak garis tengah antara arah yang pararel dan rute ats yang pararel diharapkan berdiri sendiri relevan dengan type RNP yang spesifik, panduan materi yang terkait dengan ini terdapat di lampiran B Appendix 1, ICAO Annex 11 dan CASR 171.

170.013 Penetapan atas Perubahan Poin - Poin

1. Direktorat Jenderal Perhubungan Udara berhak melakukan perubahan poin dalam rute ATS dengan mereferansi sinyal dari VOR (alat bantu navigasi) dimana hal ini harus mengacu pada keakuratan alat navigasi sepanjang rute tersebut. Penetapan perubahan poin tersebut dibatasi sejauh 110km atau (60 nm) atau lebih, terkecuali terdapat kompleksitas rute ATS, kepadatan alat navigasi, alasan
teknis, alasan operasional untuk menjamin penetapan perubahan rute ATS atau untuk mencari rute pendek.

2. Terkecuali penetapan ini berkaitan dengan kinerja alat navigasi atau jarak maksimum frekuensi, perubahan suatu poin atau rute seharusnya berada di tengah antara dua alat bantu navigasi dalam kerangka untuk membuat rute berbelok atau rute yang bersinggungan.

*Catatan: Panduan pembuatan perubahan suatu poin terdapat di Lampiran A*

**170.014 Penetapan dan Pengidentifikasi Poin – Poin Penting**

1. Direktorat Jenderal Perhubungan Udara dalam kerangka pendefinisian suatu rute atau dalam hubungannya untuk kepentingan pelayan ATS, selama pesawat terbang.

2. Poin ini di identifikasi oleh pembuat desain.


**170.015 Penetapan dan Pengidentifikasi Rute Standar untuk Pesawat Bergerak Perlahan (*Taxiing Aircraft*)**

1. Jika diperlukan, rute standar untuk pesawat yang bergerak perlahan (*taxiing aircraft*) harus ditetapkan di bandara, meliputi runway, apron dan area perbaikan pesawat, rute tersebut harus langsung, singkat dan praktis, serta di desain untuk mencegah, menghindari konflik antar pesawat.

2. Rute standar untuk pesawat yang bergerak perlahan (*taxiing aircraft*) harus didentifikasi oleh pembuat desain.

**170.016 Koordinasi antar Operator dan ATS Unit**

1. *ATS unit*, dalam menjalankan tugas mereka harus memenuhi kriteria *ICAO* sama halnya operator juga harus memenuhi criteria *ICAO* sebagaimana diwajibkan dalam *ANNEX 6* dokumen *ICAO*, dan jika
diperlukan sebaiknya operator memberitahu kantor perwakilan mereka yang telah diberi tanggung jawab.

2. Jika diperlukan oleh operator, pesan (termasuk posisi lokasi) diberitahu kepada ATS unit, termasuk bagian pelayanan operational sehingga memudahkan dalam menghubungi operator dalam kerangka ancaman pembajakan seperti dijelaskan dalam point 170.023.3.

170.017 Koordinasi antar Militer dengan ATS Unit

1. ATS unit harus menjalin hubungan yang erat dengan militer dalam rangka untuk mengetahui akan aktifitas militer yang akan berpengaruh terhadap pesawat sipil.

2. Koordinasi aktifitas yang potensial membahayakan pesawat sipil dipengaruhi sebagaimana tersebut dalam point 170.018.

3. Harus di buat perjanjian untuk dapat dijinkan menerima informasi yang relevan dalam rangka untuk keselamatan dan keefektifan yang berhubungan dengan kelancaran pesawat sipil antar unit ATS dengan militer.

   a. ATS unit harus secara rutin atau jika ada permintaan dalam rangka pembuatan local prosedur menyediakan informasi kepada pihak militer dengan memberi data secara lengkap mengenai penerbangan sipil dalam rangka menghapus atau mengurangi pengintersepan pesawat sipil. ATS unit harus mendesain area atau rute ATS sebagaimana panduan dalam Annex 2 terkait rencana terbang, komunikasi dua arah, dan posisi melaporkan, ATS unit harus menyediakan data semua penerbangan dalam rangka untuk memudahkan mengindentifikasi pesawat sipil Untuk pesawat dibajak lihat point 170.023.3 dan 170.024.1.c

   b. Prosedur khusus dibentuk untuk memastikan bahwa:

      1). Unit ATS akan selalu memberitahu jika pesawat militer akan memasuki wilayah tersebut.

170.018 Koordinasi Aktifitas Pesawat Sipil yang Berpotensi Menimbulkan Gangguan

1. Jika ada rencana aktifitas pesawat sipil yang berpotensi menimbulkan gangguan walaupun melintas dalam ruang udara sendiri atau di lautan lepas, harus dikoordinasikan dengan pihak otoritas ATS. Koordinasi hendaknya dilaksanakan sedini mungkin agar dapat waktu yang cukup untuk memberikan info ke pihak-pihak yang berwenang.

2. Jika otoritas ATS tidak berada pada negara dimana perencana aktifitas ini berada, maka koordinasi sedini mungkin harus dilaksanakan dengan ATS yang berwenang atas ruang udara yang akan digunakan.

3. Tujuan dari koordinasi ini adalah untuk menciptakan pengaturan yang baik untuk menghindari bahaya dan menimbulkan interfensi dengan penerbangan normal.

4. Untuk rencana ini dibutuhkan, informasi tentang:

   a. Lokasi (area), waktu dan durasi (lama aktifitas), ini diperlukan untuk mengatur route ATS, blokade ketinggian terbang yang ekonomis atau menimbulkan penundaan operasional pesawat.

   b. Ruang udara yang digunakan hendaknya seminimal mungkin.

   c. Komunikasi langsung antara Otoritas ATS atau unit ATS dengan pimpinan atau organisasi yang melaksanakan aktifitas ini harus terus berlangsung selama kegiatan, sehingga memudahkan koordinasi jika pesawat mengalami keadaan darurat atau keadaan lain yang tak terduga.

5. Otoritas ATS terkait harus bertanggung jawab menyebarkan informasi mengenai aktifitas tersebut.
6. Jika aktifitas yang memungkinkan terjadi bahaya ini berkelanjutan (tidak hanya sekali) komite khusus hendaknya dibentuk untuk memastikan bahwa semuanya terkoordinasikan dengan baik

7. Langkah-langkah yang diperlukan hendaknya diambil untuk mencegah emisi sinar laser mempengaruhi operasi penerbangan

170.019 Data Aeronautika

1. Penjelasan dan pelaporan ATS berkaitan dengan data aeronautical hendaknya sesuai dengan table 1-5 pada appendix 5, ICAO Annex 11 yang membahas tentang prosedur dan sistem kualitas, data yang diberikan pada data aeronautika sekrang-kurangnya 95% benar dan data mengenai survey poin (Navigasi dan Posisi), Poin kalkulasi (kalkulasi matematik) dari peninjauan dari suatu point ke point yang lain dan poin-poin yang diumumkan (e.g Flight Information Region boundary points) spesifikasi tentang pengaturan quality system terdapat pada annex 15 chapter 3.

2. Pemerintah harus memastikan bahwa data aeronautika selalu diperbarui dan disampaikan kepada pihak pengguna, berikut ini adalah klasifikasi dan level data integritas yang harus diterapkan pengaruh:
   a. Data kritikal level integritas, mempunyai pengaruh besar pada penerbangan yang aman dan dapat menghindarkan pesawat dengan bahaya.
   b. Data penting, level integritas mempunyai pengaruh kecil dalam penerbangan yang aman, tetap masih membantu untuk menghindarkan pesawat dari bahaya.
   c. Data rutin, level integritas, mempunyai pengaruh sangat kecil dalam penerbangan yang aman tetapi masih membantu untuk menghindarkan pesawat yang bahaya.

3. Perlindungan data aeronautika yang disimpan atau hanya melintas harus di monitor secara keseluruhan oleh cyclic pecundang check (IRC) untuk memberikan perlindungan pada data-data dengan level integritas kritikal dan penting dapat diterapkan 32 atau 24 bit CRC algoritma

4. Untuk memberikan perlindungan pada level integritas data aeronautika rutin dapat menerapkan 16 bit CRC algoritma.
5. Koordinat geografis yang mencantumkan letak lintang dan busur harus dijelaskan dan dilaporkan pada penguasa AIS dalam format WGS 84 diteruskan dengan format matematis yang akurasi, keaslian di lapangan. Hal ini dapat ditemukan pada Appendix 5, Table 1, ICAO Annex 11 dan CASR 171.

6. Perintah untuk memberikan keakuratan alat dilapangan dan perhitungan data deviasi yang terjadi pada operasional alat navigasi penerbangan, sebaiknya mengacu seperti yang tercantum dalam table appendix 5, ICAO Annex 11.

   a. Menggunakan referensi yang tepat yaitu WGS 84, yang memberitahu posisi dengan menggunakan koordinat

   b. Spesifikasi untuk publikasi data aeronautika disebutkan dalam annex 4 chapter 2 dan annex 15 chapter 3 dan CASR 175.

   c. Untuk penggunaan poin yang tetap dan poin yang melayani dua hal seperti untuk holding dan miss approach, poin sebaiknya memiliki keakurasian yang tinggi (CASR 171)

170.020 Koordinasi antara Meteorologi dengan Otoritas ATS

1. Untuk memastikan bahwa pesawat menerima data meteorologi yang terbaru untuk operasional pesawat, harus dibuat kesepakatan antara meteorologi dan otoritas ATS untuk personil ATS:

   a. Jika yang digunakan untuk pelaporan meteorologi menggunakan instrument atau hasil observasi personel ATS atau menggunakan yang lainnya sebaiknya segera di tingkatkan.

   b. Untuk pelaporan secepat mungkin bekerjasama dengan kantor meteorologi perihal fenomena meteorologi yang penting untuk opersional, jika fenomena tersebut tidak ada di laporan meteorologi bandara.

   c. Untuk pelaporan secepat mungkin bekerjasama dengan kantor meteorologi perihal aktifitas gunung berapi, begitu juga terkait dengan debu asapnya, dalam hal ini ACC dan FIC sebaiknya melaporkan kepada VAAC (Volcanic Ash Advisory Center)
2. Koordinasi yang erat sebaiknya tetap dijaga antara ACC, FIC dan kantor Meteorologi untuk memastikan informasi mengenai debu asap terkirim di NOTAM dan SIGMET (CASR 175).

170.021 Koordinasi antar Pelayanan Informasi Aeronautika (AIS) dan Otoritas Pelayanan Lalu Lintas Udara (ATS)

1. Untuk memastikan unit AIS mendapatkan informasi untuk persiapan sebelum terbang dan mendapatkan berita selama terbang, kesepakatan harus dibuat antara AIS dan otoritas ATS, dan berita tersebut sebaiknya sesegera mungkin segera disampaikan, seperti berita:

   a. Informasi kondisi bandara

   b. Status operational atas fasilitas terkait, pelayanannya dan alat bantu navigasi di wilayah tanggung jawabnya

   c. Kejadian aktivitas gunung berapi yang diamati oleh personil ATS dan dilaporkan oleh pilot

   d. Informasi lainnya terkait dengan kepentingan operasional

2. Sebelum memberitahu adanya perubahan sistem navigasi udara, harus segera diambil tindakan oleh yang bertanggung jawab akan perubahan tersebut dalam kerangka penerbitan di AIS, untuk mendapatkan akurasi waktu yang tepat sebaiknya dilakukan koordinasi antar unit yang terkait.

3. Beberapa perubahan penting terhadap informasi aeronautika yang akan mempengaruhi pada peta dan system computer berbasis navigasi, sebaiknya di notifikasi kepada AIS dan system AIRAC sebagaimana disebutkan dalam annex 15 chapter 6 dan appendix 4. Kesepepakatan internasional untuk pengefektifan AIRAC , tanggal efektifnya adalah 14 hari, hal ini sebaiknya diperhatikan oleh ATS unit dalam memberikan informasi ke AIS.

4. Tanggung jawab ATS untuk pemberian data informasi aeronautika haruslah tepat dan memenuhi ketentuan dalam data aeronautika sebgaimana terdapat dalam appendix 5, ICAO Annex 11 bagian ini.
a. Spesifikasi untuk menerbitkan NOTAM, SNOWTAM dan ASHTAM terdapat dalam annex 15 chapter 5.

b. Pelaporan debu asap gunung berapi informasi detailnya terdapat dalam annex 3 chapter 4.

c. Informasi AIRAC didistribusikan oleh AIS paling tidak 42 hari sebelum efektif di tanggal AIRAC dengan keharusan diterima AIS 28 hari sebelum tanggal efektifnya.


170.022 Ketinggian Terbang Minimal

Direktorat Jenderal Perhubungan Udara menetapkan dan memformulasikan ketinggian terbang minimal untuk setiap rute ATS dan Area yang di control di wilayahnya. Ketinggian terbang minimum diberikan, dengan minimum ketinggian yang diijinkan yaitu dengan minimal ketinggian diatas obstacle di area tersebut.

170.023 Pelayanan Pesawat Dalam Keadaan Darurat

1. Sebuah pesawat yang diyakinkan emergensi, termasuk dibajak, harus diberikan perhatian penuh, bantuan dan prioritas kepada pesawat lainnya, hal ini tersebut sebagai berikut:

a. Untuk mengindikasikan pernyataan darurat, pesawat yang dilengkapi kemampuan transponder SSR boleh mengoperasikan alat-alat sebagai berikut:

   1) Mode A kode 7700

   2) Mode A kode 7500 untuk mengindikasikan telah terjadi pembajakan
3) Mengaktifkan kemampuan darurat dan urgensi kapasitas di ADS-B atau di ADS-C atau

4) Mengirimkan pesan bahwa dalam keadaan darurat melalui CPDLC

b. Dalam komunikasi antar ATS unit dan pesawat dalam keadaan darurat, faktor manusia juga harus diperhatikan

Catatan: Panduan materi dan prinsip faktor manusia dapat ditemukan di Human Factor Training Manual (doc 9683)

2. Ketika pembajakan terjadi, ATS unit sebaiknya meminta informasi terkait keselamatan penerbangannya selama fase penerbangan sampai pesawat itu mendarat dengan selamat.

3. Ketika pembajakan terjadi atau diduga terjadi di pesawat, ATS unit sebaiknya berkoordinasi dengan menggunakan prosedur lokal yang disepakati, secepatnya menginformasikan otoritas setempat dengan informasi selengkapnya juga kepada operator atau perwakilan yang ditunjuk.

a. Pesawat yang tidak teridentifikasi bisa dicurigai sebagai pesawat yang dibajak, lihat 170.024.1 dan AOI.

b. Prosedur terkait penanganan pesawat yang tidak teridentifikasi terdapat pada 170.024.1 dan AOI.

c. Doc 4444 PANS—ATM chapter 15.15.1.3 juga menjelaskan prosedur terkait pembajakan (AOI).

170.024 Kemungkinan – kemungkinan yang Terjadi (contingency) pada Saat Penerbangan

1. Pesawat yang tidak teridentifikasi:

a. Istilah pesawat menyimpang dan pesawat yang tidak teridentifikasi dalam paragraf mempunyai beberapa arti:
1) Pesawat yang menyimpang adalah pesawat yang menyimpang dari jalurnya dan dilaporkan kehilangan posisi.

2) Pesawat yang tidak teridentifikasi adalah pesawat yang diobservasi atau dilaporkan beroperasi di area tertentu tapi tidak memberikan identitasnya kepada ATS unit yang melayani.

b. Pesawat yang diketahui pada saat yang sama menyimpang dan tidak teridentifikasi.

c. Pesawat yang menyimpang bisa dicurigai sebagai pesawat yang dibajak.

d. Secepatnya ketika diketahui pesawat menyimpang ATS unit segera melakukan beberapa langkah yang terdapat di 170.024.1.d.1) dan 170.024.1.d.2) untuk membantu pesawat untuk selamat, atau pesawat yang sekitanya menyimpang dan dianggap membahayakan keselamatannya.

1) Jika pesawat posisinya tidak diketahui, ATS unit harus :

a) Mengusahakan komunikasi dua arah, terkecuali sudah terjalin komunikasi.

b) Usahakan segala cara untuk mengetahui posisinya

c) Informasikan ATS unit dimana area pesawat tersebut akan menyimpang ke areanya, ambil semua kemungkinan yang akan mempengaruhi navigasi pesawat tersebut.

d) Informasikan lokal prosedur dengan pihak militer dan berikan mereka rencana terbang terkait dengan pesawat yang menyimpang tersebut.

e) Minta kepada unit mereferensi pada poin c dan d dan pesawat yang membutuhkan bantuan terjalin komunikasi seperti terdapat dalam poin d dan e, dan juga di sampaikan kepada unit ATS terkait poin c.
2) Ketika posisi pesawat sudah jelas ATS unit harus:
   
a) Mengingatkan pesawat dan koreksi posisinya ke posisi yang benar
   
b) Menyediakan informasi kepada ATS unit lain dengan relevansi informasi terkait penyimpangan dan saran yang diberikan.

   e. Secepatnya ketika ATS unit waspadai terhadap pesawat yang tidak teridentifikasi, segera cari identitas pesawat tersebut dalam kaitannya koordinasi dengan pihak militer juga untuk koordinasi prosedur lokal, pada akhirnya ATS unit harus mengambil langkah-langkah yang tepat sebagai berikut:

      1) Usahakan terjalin komunikasi dua arah
      
      2) Minta unit ATS lain di wilayah FIR nya untuk minta bantuan untuk menjalin komunikasi dua arah
      
      3) Minta kepada ATS unit di wilayah lain untuk juga mencoba menjalin komunikasi dua arah
      
      4) Minta kepada pesawat lain di sekitar area tersebut untuk merelay komunikasi

   f. ATS unit harus dan sesegera mungkin menginformasikan kepada pihak militer setelah identitas pesawat diketahui.

   g. ATS unit setelah mengetahui pesawat menyimpang dan tidak teridentifikasi tersebut sedang dibajak segera beritahu otoritas setempat dalam kerangka perjanjian dengan lokal prosedur.

2. Pencegatan Pesawat Sipil (Interception of Civil Aircraft)

   a. Sesegera ATS unit mengetahui bahwa ada pesawat sipil yang dicegat didalam wilayah tanggung jawabnya, harus melakukan langkah-langkah dibawah ini:
1) Usahakan terjalin komunikasi dengan pesawat yang dicegat melalui segala media yang tersedia, termasuk frekuensi darurat 121,5 Mhz, terkecuali sudah terjalin komunikasi.

2) Berikan informasi kepada pilot mengenai pencegatan tersebut.

3) Terjalin komunikasi dua arah antar unit yang melakukan pencegatan, terjalin pula komunikasi dengan pesawat yang melakukan pencegatan dan tersedia informasi yang cukup mengenai pesawat dimaksud.

4) Sampaikan informasi diantara pesawat yang mencegat dan unit yang mencegat serta pesawat yang dicegat, dengan informasi secukupnya.

5) Didalam koordinasi antar unit, diharapkan diambil langkah-langkah yang dianggap perlu dalam rangka menjamin keselamatan pesawat dimaksud.

6) Berikan informasi kepada unit-unit ATS terkait di wilayah FIR jika dirasa perlu, sekiranya pesawat akan menuju FIR terkait.

b. Sesegera mungkin bila ATS unit telah mengetahui bahwa ada pesawat sipil yang dicegat di luar wilayah tanggung jawabnya, harus melakukan langkah-langkah dibawah ini:

1) Menginformasikan ATS unit yang melayani wilayah tersebut dimana pencegatan tersebut akan dilaksanakan, memberikan informasi yang sesuai untuk memandu pesawat apabila teridentifikasi, memintanya untuk beraksi sesuai dengan poin 2.a.

2) Sampaikan pesan antara pesawat yang mencegat dan unit ATS yang bersangkutan unit pengontrol yang mencegat serta pesawat yang dicegat.

*Catatan : Panduan mengenai Pencegatan Pesawat Sipil dapat dilihat pada AC 170 Interception of Civil Aircraft.*
170.025 Penggunaan Waktu dalam Pelayanan Lalu Lintas Udara

1. Unit pelayanan lalu lintas udara harus menggunakan koordinat waktu dunia (Universal Time Coordinated/UTC) dan harus menunjukkan waktu dalam jam dan menit serta jika dibutuhkan dalam detik dalam waktu 24 jam sehari semalam.

2. Unit pelayanan lalu lintas udara harus dilengkapi dengan waktu yang menunjukkan jam, menit dan detik, secara jelas dapat diilhat dari berbagai posisi di dalam unit yang bersangkutan.

3. Penunjukkan waktu pada unit pelayanan lalu lintas udara dan alat perekam waktu lainnya harus diperiksa demi keperluan untuk meyakinkan penunjukkan waktu yang tepat dalam 30 detik dari waktu UTC, ketika komunikasi datalink digunakan oleh TAS unit, alat perekam yang menggunakan waktu sebaiknya selalu diperiksa.

4. Penggunaan waktu yang benar sebaiknya dilaksanakan, jika memungkinkan menyamakan waktu dengan stasiun yang lain.

5. Tower harus memberikan waktu yang tepat kepada pilot secepatnya menjelang lepas landas, terkecuali pilot menyamakan dengan sumber lain, jika ini terjadi sebaiknya dilakukan pemeriksaan waktu.

170.026 Penetapan Syarat untuk Pelaporan Transponder mengenai Pembawaan dan Operasional Ketinggian Tekanan Udara

1. Pemerintah harus menetapkan Syarat untuk Pelaporan Transponder mengenai Pembawaan dan Operasional Ketinggian Tekanan Udara bagi operasional pesawat di ruang udara yang ditentukan.

2. Hal ini dimaksukan untuk meningkatkan keefektifan pemberian jasa pelayanan lalu lintas penerbangan sama halnya dengan keefektifan penggunaan alat anti tabrakan di udara.

170.027 Manajemen Keselamatan Pelayanan Lalu Lintas Penerbangan

1. Pemerintah wajib memberi kejelasan mengenai Program Keselamatan, hal ini dalam rangka meningkatkan level keselamatan dalam pemberian ATS (lihat Doc. Indonesian Safety Management Program).
2. Pemberian level keselamatan wajib diberikan oleh Pemerintah

Catatan: Panduan program keselamatan dan pemberian level, terdapat di lampiran E pada Dokumen 9859 mengenai SMM (Safety Management Manual)

3. Pemerintah dalam Program Keselamatannya, harus memastikan ATS provider mengimplementasikan sistem manajemen keselamatannya yang di setujui pemerintah, dengan program minimalnya sebagai berikut:

a. Waspada terhadap bahaya laten.

b. Memastikan solusi yang terus menerus untuk menjaga level keselamatan yang telah didapat.

c. Melakukan monitor secara berkelanjutan dan sesekali melakukan evaluasi terhadap level yang didapat.

d. Memiliki tujuan untuk meningkatkan secara keseluruhan akan peningkatan level keselamatannya.

4. Sebuah Sistem Manajemen Keselamatan, penyedia jasa ATS harus menjelaskan dengan tegas akuntabilitasnya keselamatannya, dengan menunjuk Manajemen Senior untuk melakukan akuntabilitas dimaksud.

Catatan: Panduan terdapat dalam Dokumen 9859 mengenai SMM (Safety Management Manual) dan prosedur-prosedurnya terdapat di dalam document 4444 mengenai PANS –ATM.

5. Setiap perubahan tingkat keselamatan yang signifikan dalam sistem ATS, termasuk didalamnya kesalahan pengimplementasian minimum separasi atau kesalahan pengimplementasian prosedur, wajib dilakukan evaluasi. Dan dengan mengkonsultasikan antara pihak-pihak yang berhak menentukan level keselamatan dan juga melibatkan pengguna jasa. Dan akan lebih baik jika yang di beri kewenangan melakukan tugas ini melakukan monitor
pengimplementasian, untuk memastikan bahwa level keselamatan yang diinginkan dapat tercapai.

170.028 Penggunaan Sistem Referensi

1. Sistem Referensi Horizontal

WGS 84 (world geodetic system-1984) wajib menjadi referensi untuk acuan penggunaan sistem bermigrasi, isinya adalah koordinat geografis (yaitu latitude dan longitude)

2. Sistem Referensi Vertikal

Menggunakan MSL (Mean Sea Level), yang berisi elevasi yang diukur dari suatu permukaan, MSL ini wajib digunakan dalam sistem bermigrasi.

3. Sistem Referensi Sementara

a. Kalender Masehi dan Waktu UTC (Universal Time Coordinate) wajib digunakan sebagai referensi sistem bermigrasi (CASM 171).

b. Jika ada perbedaan penggunaan system referensi, wajib dinyatakan di AIP Aeronautical Information Publication - GEN 2.1.2

170.029 Kemampuan Berbahasa

1. Penyedia jasa ATS wajib memastikan bahwa ATC nya memiliki kemampuan berbicara dan mengerti bahasa yang digunakan dalam komunikasi radiotelephony.

2. Terkecuali ketika komunikasi antar ATC unit menggunakan bahasa yang disepakati bersama, maka digunakan bahasa lokal.

Catatan: Kemampuan minimum untuk tingkat pengoperasian adalah Tingkat 4 (lihat ATC License)
170.030 Penyiapan Kondisi Keadaan yang Tidak Terduga

1. Direktorat Jenderal Perhubungan Udara harus menyiapkan rencana dan formulasi jika terjadi keadaan yang tidak terduga dalam rangka terjadi bencana atau potensi akan terjadi bencana, dalam pelayanan ATS atau wilayah ruang udara dimana menjadi tanggung jawabnya.

2. Dalam menyiapkan rencana dan formulasi ini sebaiknya dengan bantuan ICAO, termasuk didalamnya koordinasi dengan otoritas ATS dan ruang udara yang terkait.

Catatan:


b. Contigency Plans dapat mengangkat penyimpangan sementara dari rencana yang disetujui oleh regional air navigation; penyimpangan yang disetujui tersebut seperti yang dibutuhkan oleh presiden dewan ICAO atas nama dewan.
Sub Part 170.B – PELAYANAN LALU LINTAS UDARA

170.031 Aplikasi

Pelayanan ATC wajib di berikan:

1. Semua *IFR Flight* di ruang udara kelas A,B dan C.

2. Semua *VFR Flight* di ruang udara kelas A,B dan C.

3. Semua *special VFR Flight*.

4. Semua pesawat di sirkuit bandara.

170.032 Penyediaan Jasa Pelayanan Lalu Lintas Udara

Penjelasan mengenai pelayanan ATS dijelaskan dalam sub.part 170.003.1 adalah diberikan oleh unit sebagai berikut:

1. Pelayanan *Area control* diberikan :
   
   a. Oleh ACC; atau

   b. Oleh unit yang menyediakan pelayanan *Approach* di wilayah *control zone* atau *control area* dengan catatan di wilayah tersebut tidak adanya area control center dan yang ada hanya pelayanan approach control.

2. Pelayanan *Approach control* dapat diberikan:

   a. Oleh Aerodrome Control Tower atau Area Control Centre jika dirasa perlu dapat dilakukan kombinasi di bawah wewenang salah satu unit.

   b. *Approach Control Unit*

   c. Pelayan *aerodrome control* diberikan oleh : ADC (*Aerodrome Control Tower*)
170.033 Pengoperasian Pelayanan Lalu Lintas Udara

1. Didalam pemberian Pelayanan Lalu Lintas Udara, unit Pelayanan Lalu Lintas Udara harus:

   a. Memberikan informasi yang berkaitan dengan pergerakan setiap pesawat, atau bentuk pelayanan informasi lainnya, dan informasi yang terkini sesuai keadaan saat itu terhadap setiap pesawat.

   b. Menetapkan informasi yang diterima, posisi setiap pesawat yang berhubungan dengan pesawat lainnya.

   c. Mengeluarkan ijin dan informasi untuk tujuan mencegah tabrakan antar pesawat yang sedang dikendalikan dan mempercepat serta mempertahankan pengendalian lalu lintas udara.

   d. Melakukan koordinasi yang diperlukan dengan unit lain:

      1) Pada saat dimungkinkan pesawat akan mengalami konflik dengan pesawat yang lain dimana dikendalikan oleh unit ATS lain.

      2) Sebelum pemindahan tanggung jawab pengendalian pesawat dengan unit ATS lain

2. Informasi pergerakan pesawat, merekam ATC Clearance yang sudah diberikan kepada beberapa pesawat, dan harus dilaksanakan sebagai ijin yang sudah diberikan untuk mempertahankan efisiensi arus lalu lintas udara dengan pemisahan/separasi yang mencukupi antar pesawat.

3. Unit pelayanan Lalu Lintas Udara harus dilengkapi dengan alat untuk merekam komunikasi dan percakapan antar unit lain pada ruang lingkup lalu lintas udara, mampu menyimpan rekaman informasi selama 24 jam.

4. Ijin yang dikeluarkan oleh unit pelayanan Lalu Lintas Udara harus memberikan pemisahan/separasi:

   a. Antar semua penerbangan diruang udara kelas A dan B

   b. Antar penerbangan IFR diruang udara kelas C, D dan E
c. Antar Penerbangan IFR dan VFR di Ruang Udara Kelas C

d. Antar penerbangan IFR dan sepesial Penerbangan IFR

e. Antar special Penerbangan VFR.

Terkecuali, jika diminta oleh pesawat dan jika ditentukan oleh otoritas ATS, di ruang udara kelas D dan E sebuah penerbangan boleh tanpa separasi, hanya jika penerbangan itu adalah penerbangan visual.

5. Penjelasan mengenai pemisahan/separasi yang diberikan oleh ATC unit, seperti tertera dibawah ini:

a. Pemisahan/Seperasi vertikal, diberikan dengan membedakan ketinggian dari:


2) Ketinggian yang dimodifikasi, seperti dijelaskan pada Annex 2 Appendix 3 untuk ketinggian diatas FL 410, jika tidak tidak ada hubungannya antara ketinggian dan trak sebaiknya tidak diberlakukan, terkecuali dijelaskan dalam AIP atau dalam ATC clearance.

b. Pemisahan/Seperasi Horizontal, diberikan dengan cara:

1) Pemisahan/Seperasi longitudinal, yaitu dengan cara menjaga jarak antar pesawat yang beroperasi pada trak yang sama, trak yang berbeda dan trak yang berlawanan arah, separasi ini diberikan menggunkan waktu dan jarak.

2) Pemisahan/Seperasi lateral, yaitu dengan cara menjaga pesawat pada rute yang berbeda atau pada letak geografis yang berbeda.

3) Pemisahan/Seperasi campuran, yaitu dengan cara mengkombinasi antara separasi vertikal dengan pemisahan/separasi yang tersebut diatas pada poin 2) dengan
c. Untuk ruang udara RVSM (300 m) 1000 feet, diterapkan antara FL 290 sampai dengan FL 410, untuk ruang udara ini harus dibuatkan program regional, program ini untuk menjaga ketergian pesawat yang beroperasi di ketergian tersebut diatas, hal ini untuk mencapai tujuan keselamatan, dan program ini harus sesuai untuk memonitor tipe pesawat yang relevan dari semua operator yang beroperasi di ruang udara RVSM.

d. Rencana harus pada sasarannya, melalui perjanjian antar wilayah guna membagi antara data wilayah dari program pemantauan.

170.034 Pemisahan/Seperasini Minima

1. Pemilihan penerapan dari separasi minima di beberapa bagian dari ruang udara adalah sebagai berikut:

a. Pemisahan/Seperasini minima harus dipilih sesuai yang dijelaskan pada PANS-ATM dan Prosedur Regional Tambahan yang berlaku dibawah kondisi yang sering terjadi, kecuali, ketika jenis peralatan yang digunakan pada kondisi yang sering terjadi dimana tidak dilindungi oleh ketetapan-ketetapan ICAO yang biasa dipergunakan, separasi minima lainnya harus dipakai untuk kebutuhan:

1) Wilayah wewenang lalu lintas udara diikuti dengan konsultasi dengan operator, untuk rute atau bagian rute yang tertinggi dari suatu negara;

2) Perjanjian regional navigasi udara untuk rute atau bagian rute yang dengan ruang udara di atas samudra atau di atas area yang tertinggi. Penjelasan dari separasi minima yang biasa digunakan dijelaskan dalam ICAO pada PANS-ATM (Doc.4444) dan Part 1 dari Regional Supplementary Procedures (Doc. 7030)

2. Pemisahan/Seperasini minima yang dipilih harus dibuat berdasarkan konsultasi antara unit pelayanan lalu lintas udara berkaitan yang
bertanggung jawab dalam pemberian pelayanan lalu lintas udara dalam ruang udara yang bersebelahan, ketika:

a. Pesawat akan melewati dari satu wilayah ke wilayah lainnya di ruang udara sebelah;

b. Rute-rute yang terdekat dari perbatasan biasa ruang udara sebelah daripada separasi minima yang dapat digunakan dalam kondisi tersebut.

3. Penjelasan separasi minima yang dipakai dan area yang menerapakn harus memberitahukan:

a. Kepada unit pelayanan lalu lintas udara yang bersangkutan, dan;

b. Kepada pilot dan operator melalui aeronautical information publication, dimana separasi berdasarkan penggunaan dari pesawat yang menggunakan peralatan navigasi atau teknik navigasi.

170.035 Tanggung Jawab Pengendalian

1. Tanggung jawab untuk pengendalian penerbangan individu

Pengendalian penerbangan harus di bawah pengendalian hanya untuk satu unit pelayanan lalu lintas udara pada waktu yang telah ditentukan.

2. Tanggung jawab pengendalian pada saat ruang udara diblok

Tanggung jawab untuk pengendalian semua pesawat yang beroperasi pada saat ruang udara diblok harus tetap dalam satu unit pengendalian lalu lintas udara. Meskipun demikian, pengendalian sebuah pesawat atau beberapa pesawat bisa dilimpahkan pada unit pengendalian lalu lintas udara yang terkait.

170.036 Penyerahan Tanggung Jawab Pengendalian

1. Tempat atau waktu penyerahan

Tanggung jawab untuk pengendalian sebuah pesawat harus diserahkan dari satu unit pelayanan lalu lintas udara ke unit yang lain sebagai berikut:
a. Antara dua unit yang menyediakan area control service. Tanggung jawab pengendalian sebuah pesawat harus diserahkan dari satu unit yang menyediakan area control service di dalam control area kepada unit yang menyediakan area control service di control area yang berdekatan pada saat menyeberang batas control area sesuai dengan waktu perkiraan bahwa area control centre sudah memegang penegdalian dari pesawat tersebut atau pada point atau waktu yang telah disetujui.

b. Antara unit yang menyediakan area control service dan unit yang menyediakan approach control service. Tanggung jawab pengendalian sebuah pesawat harus diserahkan dari unit yang menyediakan area control service, dan sebaliknya, pada point atau waktu yang telah disetujui antar kedua unit.

c. Antara unit yang menyediakan approach control service dan aerodrome control tower:

1) Pesawat kedatangan. Tanggung jawab penegdalian untuk pesawat kedatangan harus diserahkan dari unit yang menyediakan approach control service kepada aerodrome control tower, ketika pesawat:

a) Di sekitar bandara, dan:
   i. Dipertimbangkan bahwa pendekatan dan pendaratan pesawat akan dilaksanakan secara visual sampai ke tanah;
   ii. Mengalami kondisi gangguan cuaca.

b) Pada sebuah point yang telah ditatapkan atau level, sesuai yang dijelaskan dalam surat perjanjian atau instruksi dari unit pelayan lalu lintas udara; atau

c) Telah mendarat.

2) Pesawat Keberangkatan. Tanggung jawab pengendalian dari pesawat yang berangkat harus diserahkan dari aerodrome control tower kepada unit yang menyediakan approach control service;
a) Kondisi visual meteorologi dilakukan di sekitar bandara:
   i. Sebelum pasawat meninggalkan bandara, atau
   ii. Sebelum pesawat memasuki kondisi instrument meteorology, atau pada poin yang telah ditentukan atau level,
   iii. Sesuai yang dijelaskan pada surat perjanjian atau sesuai instruksi dari unit pelayanan lalu lintas udara;

b) Ketika kondisi instrument meteorological dilakukan di bandara:
   i. Segera setelah pesawat berangkat, atau
   ii. Sesuai yang dijelaskan pada surat perjanjian atau sesuai instruksi dari unit pelayanan lalu lintas udara.

d. Antara sektor-sektor pengendalian atau posisi dalam unit pelayan lalu lintas udara yang sama. Tanggung jawab penegndalian pesawat harus diserahkan dari satu sector atau posisi ke sector atau posisi yang lain dalam unit pelayanan lalu lintas udara yang sama pada point, level atau waktu, sesuai yang diinstruksikan oleh unit pelayanan lalu lintas udara.

2. Koordinasi penyerahan tanggung jawab
   a. Tanggung jawab pengendalian pesawat tidak boleh ditransfer dari satu unit pelayanan lalu lintas udara ke unit lain tanpa persetujuan dari unit penerima, dimana harus sesuai dengan butir b, 1), 2) dan
   b. Unit yang mentransfer harus berkomunikasi dengan unit penerima tentang hal-hal yang ada pada flight plan dan informasi apapun yang berkaitan dalam permintaan transfer.

1) Ketika penyerahan pengendalian menggunakan radar atau data ADS-B, informasi pengendalian yang berkenaan dengan penyerahan pengendalian harus termasuk didalamnya informasi mengenai posisi dan jika dibutuhkan, jalur dan kecepatan pesawat, sesuai yang terpantau oleh radar atau ADS-B sesegera mungkin pada saat transfer.
2) Ketika penyerahan pengendalian menggunakan data ADS-C, informasi pengendalian yang berkenaan dengan transfer pengendalian harus termasuk didalamnya empat posisi tertentu dan informasi lainnya yang diperlukan.

c. Unit penerima harus :

1) Menunjukkan kemampuannya dalam menerima pengendalian dari pesawat dalam jangka waktu yang telah ditetapkan oleh unit yang mentransfer, kecuali dengan perjanjian sebelumnya antara duan unit yang bersangkutan, ketiadaan dari beberapa indikasi dapat dimengerti untuk menandakan penerimaan syarat-syarat yang ditentukan, atau menandakan perubahan apapun yang diperlukan selain itu; dan

2) Menetapkan informasi lainnya atau ijin untuk penerbangan berikutnya, yang dibutuhkan pesawat pada saat transfer.

d. Unit penerima harus memberitahu unit yang mentransfer pengendalian ketika relasi terjadi komunikasi dua arah dan atau dengan komunikasi data penghubung dan diterima pengendalian dari pesawat yang bersangkutan.

e. Prosedur koordinasi yang digunakan, termasuk point penyerahan pengendalian, harus dijelaskan dalam surat perjanjian dan sesuai instruksi dari unit pelayanan lalu lintas udara.

170.037 Air Traffic Control Clearance

Air traffic control clearances harus semata-mata berdasarkan dari permintaan untuk menyediakan pelayanan lalu lintas udara.

1. Isi clearance

a. Suatu air traffic control clearances harus menunjukkan :

1) Identifikasi pesawat, seperti yang tertera dalam rencana terbang;

2) Batas clearance;

3) Rute penerbangan;
4) Level penerbangan untuk seluruh rute atau bagian dari itu dan perubahan level jika diperlukan.

b. Rute standar keberangkatan dan kedatangan dan prosedur yang berhubungan harus dilakukan ketika diperlukan untuk memudahkan:

1) Keselamatan, keteraturan dan kecepatan pergerakan lalu lintas udara;
2) Penjelasan tentang rute dan prosedur dalam air traffic control clearance.

2. Pengulangan (read-back) dari perijinan (clearance) dan informasi terkait keselamatan

a. Flight crew harus mengulang (read-back) setiap bagian dari clearance dan instruksi yang menyangkut keselamatan yang disampaikan melalui suara (voice) kepada pemandu lalu lintas udara.

1) **clearance** rute ATC;
2) **clearance** dan instruksi untuk memasuki, mendarat, take off, berhenti, menyebrangi, atau memasuki landas pacu, dan
3) landas pacu yang digunakan, altimeter setting, kode SSR, instruksi ketinggian, instruksi heading dan kecepatan dan cuaca yang disampaikan pemandu lalu lintas udara atau yang terdapat pada siaran ATIS, level transisi.

4) Clearance atau instruksi lain, termasuk clearance kondisional, harus diulang (read-back) atau ditanggapi untuk menunjukkan bahwa mereka dapat mengerti serta akan melaksanakan clearance serta instruksi dimaksud.

b. Pemandu lalu lintas udara harus mendengarkan pengulangan (read-back) untuk meyakinkan bahwa clearance dan instruksi telah ditanggapi dengan benar oleh flight crew dan harus segera mengambil tindakan apabila terdapat perbedaan dalam read-back yang disampaikan tersebut.
c. Kecuali terdapat ketentuan lain dari Direktorat Jenderal Perhubungan Udara, pengulangan (read-back) dengan suara (voice) tidak diperlukan untuk pesan yang menggunakan CPDLC.

3. Koordinasi mengenai clearance

ATC clearance harus dikoordinasikan antara unit pemandu lalu lintas udara untuk seluruh rute atau bagian tertentu sebagai berikut:

a. Pesawat harus diijinkan untuk seluruh rute menuju bandara untuk dia mendarat:

1) Jika memungkinkan, sebelum berangkat, semua unit yang akan memandu pesawat tersebut berkoordinasi mengenai clearance

2) Jika terdapat jaminan yang beralasan bahwa koordinasi awal akan diefektifkan antara unit-unit dimana pesawat tersebut selanjutnya akan dipandu.

b. Jika koordinasi belum diperoleh atau belum diantisipasi, pesawat hanya boleh diijinkan sampai poin dimana koordinasi dapat terjamin; sebelum mencapai point tersebut, atau pada poin tersebut, pesawat harus mendapat clearance selanjutnya, perintah holding dapat dilakukan sesuai keadaan.

1) Jika ditentukan oleh direktorat Jenderal Perhubungan Udara, pesawat harus menghubungi unit ATC berikutnya dengan tujuan untuk mendapatkan clearance berikutnya sebelum memasuki point transfer of control

a) Ketika pesawat tersebut memperoleh clearance lanjutan, pesawat harus mempertahankan komunikasi dua arah dengan ATC unit yang saat itu memandunya.

b) Clearance yang disampaikan sebagai clearance lanjutan harus disampaikan secara jelas kepada pilot

c) Kecuali telah dikoordinasikan, clearance lanjutan tidak boleh memberikan pengaruh terhadap profil terbang pesawat pada
berbagai ruang udara, selain itu pemandu lalu lintas udara bertanggung jawab dalam penyampaian clearance lanjutan.

d) Jika dapat dilakukan, dan jika komunikasi data link digunakan untuk penyampaian clearance lanjutan, komunikasi dua arah antara pilot dengan unit ATC yang memberikan clearance lanjutan harus tersedia.

c. Ketika pesawat akan berangkat dari sebuah bandara yang terdapat pada control area untuk memasuki control area lain dalam waktu 30 menit, atau dalam jangka waktu lain yang telah disepakati antara area control centre terkait, koordinasi antara area control centre harus terjalin sebelum pemberian clearance keberangkatan.

d. Ketika pesawat akan meninggalkan control area untuk terbang di luar controlled airspace, dan akan memasuki kembali control area, clearance dapat diberikan dari point dimana dia berangkat ke bandara dimana pesawat tersebut akan mendarat. Clearance atau revisi hanya dapat diberikan pada controlled airspace.

4. Air Traffic Flow Management

(Reserved)

5. Pengendalian orang dan kendaraan di bandara

a. Pergerakan orang dan kendaraan termasuk pesawat yang ditarik pada manoeuvring area sebuah bandara harus dikendalikan oleh aerodrome control tower untuk menghindari bahaya bagi mereka atau bagi pesawat yang mendarat, taxi ataupun tinggal landas

b. Kondisi dimana dalam Keadaan Jarak Pandang terbatas (low visibility)

1) Pergerakan orang dan kendaraan di manoeuvring area harus dibatasi seminimal mungkin, dan perhatian khusus harus diberikan untuk melindungi ILS/MLS sensitive area ketika precision approach category II atau III digunakan.

2) Terkait point c, separasi minima antara kendaraan dengan pesawat yang sedang taxi harus dijaga.
3) Ketika campuran antara ILS dan MLS kategori II atau kategori III digunakan pada runway yang sama secara berkelanjutan, area kritis dan sensitive dari ILS atau MLS harus dilindungi.

c. Kendaraan darurat yang akan memberikan bantuan kepada pesawat darurat, harus diberikan prioritas utama dibandingkan pergerakan didarat lainnya.

d. Terkait butir c, kendaraan area pergerakan harus mematuhi peraturan sebagai berikut:

1) kendaraan dan kendaraan yang menarik pesawat harus memberikan jalan kepada pesawat yang mendarat, lepas landas atau taxi;

2) kendaraan harus memberikan jalan kepada kendaraan lain yang menarik pesawat;

3) Kendaraan harus memberikan jalan kepada kendaraan lain seperti instuksi unit ATC;

4) Kendaraan dan kendaraan yang menarik pesawat harus memenuhi instruksi yang diberikan oleh aerodrome control tower.

6. Pemberian Radar dan ADSB

Radar dan system darat ADSB harus diberikan untuk mendisplaykan keselamatan terkait kewaspadaan dan peringatan, termasuk kewaspadaan konflik, prediksi konflik, peringatan minimum safe altitude, dan duplikasi SSR code yang tidak diinginkan.

7. Penggunaan Surface Movement Radar (SMR)

Pada keadaan dimana semua bagian atau sebagian manoeuvring area tidak dapat dilakukan observasi secara visual, SMR digunakan sesuai yang tercantum pada annex 14 volume I, atau peralatan penginderaan lain yang sesuai harus digunakan untuk:

a. Memonitor pergerakan pesawat dan kendaraan di maneouvrng area;
b. Memberikan informasi langsung kepada pilot dan pengemudi kendaraan jika diperlukan;

c. Memberikan saran dan bantuan untuk keselamatan serta efisiensi pergerakan pesawat dan kendaraan di maneouvring area.
SUB PART 170.C - PELAYANAN INFORMASI PENERBANGAN

170.038 Penggunaan

1. *Flight information service* harus diberikan kepada semua pesawat yang terpengaruh oleh informasi tersebut serta pesawat yang:

   a. diberikan pelayanan lalu lintas udara;
   
   b. sebaiknya diketahui oleh unit – unit ATS yang bersangkutan.

2. Jika unit ATS memberikan keduanya baik flight information service maupun ATC service, pemberian ATC service harus diutamakan daripada flight information service.

170.039 Cakupan dari *Flight Information Service*

1. Flight information service harus mencakup hal berikut:

   a. informasi SIGMET dan AIRMET;
   
   b. Informasi mengenai aktivitas pre-erupsi vulkanik, erupsi vulkanik dan awan abu vulkanik.
   
   c. informasi terkait pelepasan ke atmosfir bahan-bahan radio aktif atau bahan kimia beracun;
   
   d. Informasi mengenai perubahan kemampuan alat navigasi;
   
   e. Informasi mengenai perubahan kondisi bandara dan fasilitasnya, termasuk informasi di negara yang wilayah pergerakan bandaranya tersebut diakibatkan dari salju, es atau adanya kedalaman air yang signifikan.
   
   f. informasi pada balon udara tanpa awak dan informasi lainnya yang berakibat terhadap keselamatan.

2. *FIS* atau jasa pelayanan informasi penerbangan disediakan untuk penerbangan sesuai dengan point 1, ketetapan mengenai informasi antara lain:

   a. kondisi cuaca yang dilaporkan atau di ramalkan pada badara keberangkatan, tujuan dan bandara alternatif.
b. bahaya akan tabrakan, untuk pesawat udara yang beroperasi pada wilayah udara kelas C, F dan G.

c. Untuk penerbangan diatas wilayah air sejauh ini dapat dilaksanakan dan pada saat diminta oleh pilot informasi apasaja, seperti radio Call Sign, Posisi, jalur yang digunakan, kecepatan dll, dari permukaan naviasi dalam suatu wilayah.

3. ATS sebaiknya mengirimkan laporan udara yang khusus kepada pesawat udara lain yang dituju, kepada kantor meteo yang berkaitan dan ATS unit lain yang di tuju. Pengiriman kepada pesawat udara sebaiknya terus menerus agar dapat ditentukan oleh kesepakatan antara meteo dan ATS unit yang dituju.

4. FIS disediakan untuk penerbangan VFR harus termasuk didalamnya, sesuai yang tertera pada bagian 1, ketetapan mengenai informasi yang tersedia yang berkaitan dengan trafic, kondisi cuaca sepanjang route penerbangan dimana pengoperasiannya mengguanakan VFR.

**170.040 Penyiaran Operasional Pelayanan Informasi Penerbangan (OFIS)**

1. Penggunaan

   a. informasi meteorologi dan informasi operasional menegani alat bantu navigasi dan aerodroms termasuk didalam FIS, apabila dimungkinkan disediakan dalam sebuah bentuk.

   b. dimana pengoperasian FIS dikirimkan sebaiknya kepada pesawat udara, dikirimkan dengan (isi/muatan) content, dan selama fase terbang.

   c. Operasional FIS Broadcast, pada saat disediakan sebaiknya terdiri dari pesan2 yang berisi informasi didalamnya mengenai operasional dan elemen-elemen meteorologi yang berkaitan pada berbagai macam fase terbang. Pengiriman ini sebaiknya terdiri dari 3 tipe misanya HF, VHF dan ATIS.

   d. menggunakan pesan2 OFIS pada request dan replay transmisi ketika diminta oleh penerbang, pesan-pesan OFIS sebaiknya dikirimkan oleh unit ATS yang berkaitan.
2. **HF OFIS Broadcast**

a. **HF OFIS Broadcast** sebaiknya disediakan pada saat sudah ditentukan oleh kesepakatan wilayah navigasi udara yang dimana persyaratan tersebut ada.

b. ketika terdapat **HF OFIS Broadcast**:

1) informasi sebaiknya berhubungan dengan poin 4.3.2.5, yang sesuai dengan kesepakatan wilayah navigasi udara.

2) **Aerodrome** dimana laporan dan ramalan yang termasuk didalamnya harus ditentukan kesepakatan wilayah navigasi udara.

3) Urutan waktu dari **station-station** yang tergabung dalam broadcast atau pengiriman sebaiknya ditentukan oleh kesepakatan wilayah navigasi udara.

4) Pesan-pesan **HV OFIS B** sebaiknya diambil berdasarkan pertimbangan operator. Pengiriman pesan sebaiknya tidak melebihi panjang dari waktu yang di alokasikan berdasarkan kesepakatan wilayah navigasi udara, yang harus diperhatikan adalah kemampuan pembacaan yang tidak menganggu kecepatan dari pengiriman.

5) Masing-masing pesan **aerodrome** sebaiknya diidentifikasi atau ditentukan dengan nama dari **aerodrome** dimana informasi tersebut dipergunakan.

6) Pada saat informasi tidak dapat diterima pada waktu penyiaran, informasi terakhir yang dimungkinkan sebaiknya dimasukkan bersamaan dengan waktu dari obserfasi tersebut.

7) Pengiriman pesan secara penuh sebaiknya diulangi jika hal itu memungkinkan dengan catatan waktu yang diberikan dari station yang dikirimkan.

8) Pengiriman informasi atau penyiaran sebaiknya ditingkatkan secepatnya jika terjadi perubahan yang significant dan.
9) Pesan HF OFIS sebaiknya disiapkan dan disebarkan oleh sebagian besar unit2 yang terkait pada masing2 negara.

c. Perkembangan yang dinantikan dan mengadopsi bentuk yang lebih cocok terhadap kemampuan berbicara yang digunakan diseluruh dunia terdapat dalam komunikasi Aeronautical Radiotelephony, Penyiaran HF OFIS yang mengenai aerodrome yang ditunjuk untuk digunakan pelayanan udara internasional sebaiknya menggunakan bahasa Inggris.

d. HF OFIS B dapat digunakan lebih dari 1(satu) bahasa, sebuah saluran yang berbeda sebaiknya digunakan untuk masing-masing bahasa.

e. Pesan-pesan HF OFIS B sebaiknya terdiri dari informasi-informasi dibawah ini, seperti yang ditentukan kesepakatan wilayah navigasi udara, yaitu :

1) Informasi cuaca pada saat en-route sebaiknya terdapat dalam bentuk yang tertera pada SIGMET seperti yang di jelaskan pada Annex 3.

2) Yang termasuk informasi aerodrome adalah:

a) nama aerodrome;

b) waktu observasi;

c) informasi operasional yang penting;

d) arah angin dan kecepatan; jika dimungkinkan kecepatan maksimum angin;

e) jarak pandang; dan jika memungkinkan Jarak Pandang Runway (RVR);

f) kondisi cuaca pada saat itu;

g) awan dibawah 1500m atau 5000 feet atau dibawah Minimum sector altitude yang lebih tinggi, yang mana lebih besar; cumulunimbus; jika langit dalam keadaan gelap, jarak pandang vertikal dapat digunakan;
h) ramalan Bandar Udara.

3. **VHF operational fight information service (OFIS) Broadcast**

a. **VHF OFIS Broadcast** sebaiknya disediakan seperti yang ditentukan oleh kesepakatan wilayah navigasi udara.

b. Bilamana penyiaran seperti itu akan dilengkapi:

1) bandara yang mana pelaporan dan ramalannya telah ditentukan oleh kesepakatan wilayah navigasi udara

2) tiap pesan bandara agar dapat diidentifikasikan dengan menggunakan nama dari bandara yang mengirimkan pesan tersebut.

3) Apabila informasi belum dapat diterima pada waktunya untuk disiarkan, informasi terakhir yang tersedia sebaiknya termasuk bersama dengan waktu observasi tersebut;

4) penyiaran sebaiknya terus menerus dan berulang;

5) Pesan penyiaran **VHF OFIS** sebaiknya diambil berdasarkan pertimbangan operator. Pengiriman pesan sebaiknya, apabila dapat dilaksanakan, tidak lebih dari 5 (lima) menit, yang harus diperhatikan adalah kemampuan pembacaan yang tidak menganggu kecepatan dari pengiriman;

6) penyiaran pesan sebaiknya diperbaharui berdasarkan jadwal yang telah ditentukan oleh kesepakatan wilayah navigasi udara sebagai tambahan sebaiknya dapat diperbaharui langsung secara cepat apabila terjadi perubahan yang signifikan;

7) pesan **VHF OFIS** sebaiknya dapat dipersiapkan dan disebarkan oleh unit-unit yang paling pantas yang ditunjuk di tiap negara.

c. Perkembangan yang dinantikan dan mengadopsi bentuk yang lebih cocok terhadap kemampuan berbicara yang digunakan diseluruh dunia terdapat dalam komunikasi **Aeronautical Radiotelephony**, Penyiaran **VHF OFIS** yang mengenai aerodrome yang ditunjuk
untuk digunakan pelayanan udara internasional sebaiknya menggunakan bahasa Inggris.

d. dimana VHF OFIS B dapat digunakan lebih dari 1 bahasa, maka saluran yang berlainan sebaiknya digunakan untuk tiap-tiap bahasa.

e. Pesan – pesan penyiaran VHF OFIS sebaiknya terdiri dari informasi- informasi dibawah ini:

1) nama bandara;

2) waktu observasi;

3) landasan mendarat;

4) kondisi permukaan landasan yang signifikan dan, jika memungkinkan, aksi pengereman;

5) perubahan dalam negara pengopersian peralatan navigasi, apabila dimungkinkan;

6) penundaan holding, jika dimungkinkan;

7) arah permukaan angin dan kecepatan jika dimungkinkan kecepatan maksimum angin

8) jarak pandang; dan jika memungkinkan Jarak Pandang Runway (RVR);

9) kondisi cuaca pada saat itu;

10) awan dibawah 1500m atau 5000 feet atau dibawah MSA yang lebih tinggi, yang mana lebih besar; comulusnimbus; jika langit dalam keadaan gelap, jarak pandang vertikal dapat digunakan

11) temperatur udara;

12) temperatur titik embun (dew point);

13) QNH Altimeter Setting;

14) informasi tambahan dalam kondisi cuaca yang terbaru pada opersi yang signifikan, dimana diperlukan, wind shear;
15) ramalan kecenderungan, apabila dapat digunakan; dan
16) memberitahukan pesan-pesan SIGMET yang terbaru.

4. Penyiaran Voice ATIS

a. penyiaran Voice ATIS sebaiknya diberikan kepada bandara dimana terdapatnya permintaan untuk mengurangi beban komunikasi pada saluran komunikasi ATS VHF diadara dan didarat. Apabila diperlukan, hal tersebut terdiri dari:

1) satu alat penyiaran pada pesawat datang, atau;
2) satu alat penyiaran pada pesawat berangkat, atau;
3) satu alat penyiarkan baik pada pesawat yang dating maupun yang akan berangkat; atau
4) dua peralatan penyiaran pada pesawat yang datang dan yang berangkat secara berurut-urut pada bandara tersebut dimana jarak dari peralatan broadcast baik pada saat pesawat datang dan berangkat akan sering menjadi panjang.

b. Siaran ATIS sebaiknya menggunakan frekuensi VHF, jika tidak tersedia boleh juga ditransmisikan disaluran suara di tempat yang paling tepat di terminal alat bantu navigasi, lebih tepat biasanya adalah VOR, menyediakan jarak dan jangkauan yang sama dengan pancaran navigasi dan ini tersiar secara terus menerus dan bergantian dengan pancaran VOR sehingga tidak saling mendahului.

c. Suara siaran ATIS jangan dipancarkan menggunakan pancaran ILS.

d. Ketika ATIS tersedia suaranya harus bersambung dan tidak boleh putus-putus.

e. Informasi yang terdapat didalamnya harus sesering mungkin diketahui oleh ATS unit, berkaitan dengan informasi untuk pendekatan, mendarat dan tinggal landas, apalagi jika yang diinformasikan tersebut bukan dibuat oleh unit terkait.

f. Suara ATIS sebaiknya menggunakan bahasa inggris.
g. Jika suara ATIS tersedia dalam berbagai bahasa sebaiknya dipilih salah satu.

h. Siaran suara ATIS sebaiknya praktis, tidak lebih cepat dari 30 detik dan juga tidak disamakan dengan pencaran alat bantu navigasi, siaran ATIS harus juga memperhatikan performa manusia.

5. D–ATIS (Data link ATIS)
   
a. Ketika ATIS disiarkan formatnya harus sama dengan format ATIS yang disiarkan sebelumnya.
   
1) Ketika informasi cuaca terkini dimasukan dan ada parameter yang berubah, maka disampaikan dengan menggunakan format yang sama.

b. Ketika ATIS dan D-ATIS isinya dirubah maka harus dirubah secara bersamaan.

6. ATIS (suara/voice dan atau data link)
   
a. apabila Voice – ATIS dan/atau D- ATIS disajikan:
   
1) Komunikasi informasi harus terkait dengan satu bandara.

2) Informasi harus diperbaharui secepatnya ketika ada perubahan yang dirasa penting untuk disampaikan.

3) persiapan dan penyampaian pesan ATIS harus menjadi tanggung jawab ATS unit.

4) Identitas pesan ATIS harus menggunakan pengucapan urutan abjad (alphabet) format ICAO, dan diberlakukan konsekuatif terhadap siaran ATIS dengan menggunakan format ICAO.

5) pesawat sebaiknya memberitahu informasi yang diterima dari ATIS ketika telah terjalin komunikasi dengan Approach dan Tower.
6) ATS unit ketika menjawab pesan butir e) diatas dalam kerangka pesawat datang alangkah baiknya ATS unit menyediakan informasi tentang pengesetan alat ketinggian.

7) informasi meteorologi harus dikumpulkan dari kantor meteo setempat secara rutin.

b. Ketika terjadi perubahan kondisi meteo, masukan kedalam informasi kondisi cuaca di siaran ATIS, pesan ATIS harus mengindikasikan kondisi cuaca yang relevan dengan kondisi sebenarnya dan juga harus diberikan kontak awal oleh ATS unit.

c. informasi yang terkandung dalam ATIS, ditujukan langsung ke pesawat,dengan tidak terkecuali penyampaian alat setting ketinggian,seperti butir 170.046.6a.7 dan juga harus sering diperbaharui.

c. isi ATIS sebaiknya seperti memberi briefing, informasi tambahan seperti pada point 170.046.7 dan 9, untuk contoh informasi yang sudah terdapat pada AIP dan NOTAM,hanya diberikan jika ada kejadian khusus.

7. ATIS untuk kedatangan dan keberangkatan pesawat,

Pesan ATIS harus mengandung informasi kedatangan dan keberangkatan dan harus mengandung beberapa elemen informasi tersebut dibawah ini :

a. nama bandara;

b. Indikasi kedatangan dan keberangkatan;

c. tipe kontrak, jika komunikasi lewat D-ATIS;

d. pembuat ATIS;

e. waktu observasi,jika diperlukan;

f. tipe pendaratan yang diinginkan;

g. runway yang digunakan;
h. keadaan permukaan landasan, jika diperlukan;
i. delay holding (Menunggu penundaan) jika perlu;
j. level transisi jika digunakan;
k. Informasi penting untuk operasional;
l. Kondisi angin permukaan, termasuk variasinya;
m. jarak pandang, RVR;

n. cuaca saat ini;
o. awan dibawah 1500 m atau 5000 feet atau dibawah MSA (minimal ketinggian sector);
p. temperature udara;
q. temperature titik embun (dew point);
r. pengesetan alat ukur ketinggian;
s. informasi tentang keadaan fenomena meteorologi yang signifikan dalam approach dan lintas area termasuk keberadaan windshear, dan informasi tentang kondisi cuaca yang signifikan dalam pengoperasian pesawat udara;
t. perkiraan cuaca;
u. instruksi khusus ATIS;

8. ATIS untuk pesawat yang datang, terdiri dari:

a. nama aerodrome;
b. indikator Kedatangan;
c. tipe kontrak, jika komunikasi lewat D-ATIS;
d. designator;

e. waktu observasi;

f. tipe approach yang akan digunakan;

g. runway yang sedang digunakan;

h. kondisi permukaan runway;

i. holding delay, jika ada;

j. transition level, jika ada;

k. Informasi operasional penting lainnya;

l. arah dan kecepatan angin;

m. jarak pandang dan jika memungkinkan RVR;

n. kondisi cuaca terakhir;

o. awan dibawah 1500 m (5000 ft) atau dibawah minimum sector altitude tertinggi dan visibility vertical jika memungkinkan;

p. temperatur Udara;

q. temperatur titik embun (dew point);

r. altimeter Setting;

s. informasi tentang keadaan fenomena meteorology yang signifikan dalam approach dan lintas area termasuk keberadaan windshear, dan informasi tentang kondisi cuaca yang signifikan dalam pengoperasian pesawat udara;

t. perkiraan cuaca;

u. instruksi khusus ATIS;
9. ATIS untuk pesawat yang berangkat, terdiri dari:

   a. nama aerodrome;
   b. indikator keberangkatan;
   c. tipe kontrak, jika komunikasi lewat D-ATIS;
   d. designator;
   e. waktu Observasi;
   f. runway yang sedang digunakan untuk lepas landas;
   g. kondisi permukaan runway untuk lepas landas;
   h. delay Keberangkatan, jika ada;
   i. transition Level, jika ada;
   j. informasi Operasional penting lainnya;
   k. arah dan kecepatan angin;
   l. jarak pandang dan jika memungkinkan RVR;
   m. kondisi cuaca terakhir;
   n. awan dibawah 1500 m (5000 ft) atau dibawah minimum sektor altitude tertinggi dan visibility vertical jika memungkinkan;
   o. temperatur Udara;
   p. temperatur titik embun (dew point);
   q. altimeter setting;
   r. informasi tentang keadaan fenomena meteorology yang signifikan termasuk keberadaan windshear, dan informasi tentang kondisi cuaca yang signifikan dalam pengoperasian pesawat udara;
s. perkiraan cuaca;

t. instruksi khusus ATIS;

170.041 Penyiaran Volmet dan D – Pelayanan Volmet

1. *HF* dan *I* atau *VHF VOLMET Broadcasts* dan/ atau *D- VOLMET* service harus diberikan jika ada perjanjian navigasi regional.

2. *VOLMET Broadcasts* harus menggunakan Pharseologies radio telephony yang baku.
SUB PART 170.D. PELAYANAN SIAGA

170.042 Penggunaan

1. Pelayanan siaga harus diberikan kepada:
   
a. Seluruh pesawat yang diberikan pelayanan lalu lintas udara.
   
b. Sejauh mungkin untuk pesawat lainnya yang telah mengisi flight plan atau memberitahu pemandu lalu lintas udara.
   
c. Untuk pesawat yang diketahui atau dilayani mengalami pembajakan.

2. Flight Information centre atau area control centre berlaku sebagai pusat informasi yang relevan jika terjadi pesawat emergency dalam flight information region atau control area dan unit ini bertugas sebagai pusat koordinasi penyelamatan.

3. Jika kejadian pesawat emergensi saat dikontrol oleh aerodrome control tower dan approach control unit, unit tersebut harus memberitahu flight information centre atau area control centre secepat mungkin dalam kaitannya dengan perannya sebagai pusat koordinasi penyelamatan, kecuali area control centre, atau pusat koordinasi penyelamatan tidak membutuhkan info tersebut.
   
a. Saat terjadi situasi urgency, aerodrome control tower atau approach control unit bertanggung jawab untuk memberikan tanda dan mengambil langkah yang berwenang menangani emergency dapat memberikan pertolongan pertama.

170.043 Pemberitahuan Kepada BASARNAS (Rescue Coordination Centre)

1. Sesuai asas praduga tidak bersalah, unit pelayanan lalu lintas udara mempunyai kewajiban untuk memberitahu pusat koordinasi penyelamatan secepat mungkin saat pesawat tersebut dinyatakan dalam keadaan darurat sesuai tahapan:
a. Fase Tak Menentu (Uncertainty Phase)

1) jika tidak ada komunikasi yang diterima dari pesawat dalam periode 30 menit dari waktu seharusnya komunikasi diterima, atau tidak bisa melaksanakan komunikasi dari awal.

2) Pesawat gagal mendarat 30 menit dari perkiraan waktu kedatangan yang dilaporkan, atau perkiraan aktu kedatangan dari pemandu lalu lintas udara

b. Fase Siaga (Alert Phase)

1) Fase ini merupakan kelanjutan dari Fase tak menentu, jika pesawat mengirimkan berita kerusakan

2) Pesawat sudah diberi ijin untuk mendarat tapi gagal mendarat dalam 5 menit dan komunikasi tidak dapat dijalin kembali.

3) Informasi telah diterima yang mengindikasikan bahwa efisiensi sangat diperlukan, tetapi bukan untuk memaksakan mendarat.

4) Pesawat yang diyakini mengalami pembajakan.

c. Fase Darurat (Distress Phase)

1) Kelanjutan fase alert, dimana tidak dapat menjalin komunikasi kembali dengan pesawat dan tidak melapor pada reporting poin.

2) Diperkirakan bahan bakar di pesawat akan segera habis atau diyakini keselamatan pesawat terancam.

3) Diterima informasi kemungkinan bahwa pesawat mengalami kerusakan dan akan melaksanakan pendaratan darurat (forced landing).

4) Diterima informasi bahwa pesawat mengalami pendaratan darurat (forced landing).

2. Informasi yang diberikan oleh pemandu lalu lintas udara, meliputi:
a. Yang memungkinkan tercantum dalam daftar

1) INCERFA, ALERFA or DISTRESSFA, sesuai fase darurat.

2) Nomor telepon agen atau perusahaan.

3) Penyebab emergency.

4) Informasi significant dari flight plan.

5) Unit yang terakhir berkomunikasi dengan pesawat termasuk waktu.

6) Posisi terakhir pesawat dan bagaimana kondisinya.

7) Warna dan tanda-tanda pesawat.

8) Barang berbahaya yang dibawa (jika ada).

9) Tindakan yang harus diambil oleh reporting office.

10) Hal – hal lain yang berhubungan.

a. Bagian informasi yang ditentukan pada poin 170.043.2 namun tidak tersedia pada saat pemberitahuan ke BASARNAS (rescue coordination centre) unit ATS seharusnya mencari tahu sebelum pernyataan keadaan darurat, jika terdapat kesempatan yang memungkinkan.

b. Pemberitahuan dalam poin 170.043.1, BASARNAS (rescue coordination centre) harus melengkapi hal – hal sebagai berikut tanpa penundaan:

1) Tambahkan informasi yang berguna, khususnya dalam perkembangan penetapan kondisi darurat atau

2) Informasi tentang berakhirnya situasi darurat.

3) Pembatalan aksi oleh BASARNAS (rescue coordination centre) yang bertanggung jawab pada daerah tersebut.
170.044 Penggunaan Fasilitas Komunikasi

ATS unit jika diperlukan sebaiknya menggunakan semua fasilitas komunikasi yang tersedia dalam rangka untuk menjaga dan tetap komunikasi dengan pesawat ketika emergensi dan untuk meminta berita dari pesawat.

170.045 Perencanaan Peletakan (Plotting) Pesawat pada Kondisi Darurat

Ketika darurat sedang terjadi, pesawat yang sedang terbang tersebut harus di plot di dalam peta dalam rangka menjaga kemungkinan posisi pesawat ke depan dan jarak terjauh dari posisi semula, penerbangan lain yang terdapat didekat pesawat tersebut juga seharusnya di plot untuk berjaga-jaga dengan segala kemungkinan.

170.046 Memberi Informasi ke Operator

1. Ketika ACC dan FIC memutuskan bahwa pesawat dalam kondisi ALERFA, usahakan sepraktis mungkin memberitahu operator pada kesempatan pertama untuk menghubungi BASARNAS/RCC (Rescue Coordination Centre)

2. Jika pesawat dalam kondisi Fase Distress, harus sesegera mungkin menghubungi BASARNAS/RCC (Rescue Coordination Centre) sesuai yang tertera dalam 170.043.1.

3. Semua informasi dinotifikasikan kepada RCC (rescue coordination centre) oleh ACC atau FIC sebaiknya sepraktis mungkin, dan juga komunikasi tanpa penundaan.

170.047 Informasi Kepada Pesawat yang ada di Sekitar Area Pesawat yang Mengalami Keadaan Darurat.

1. Sesegera mungkin unit pelayanan lalu lintas udara memberitahu pesawat lain bahwa terdapat pesawat darurat beserta penyebabnya.
2. Jika pesawat darurat dikarenakan pembajakan, maka penyebabnya tidak boleh diberitahukan ke pesawat lain.

Sub Part 170.E - Perlengkapan Komunikasi Pelayanan Lalu Lintas Udara

170.048 Pelayanan Aeronautika Bersifat Tidak Tetap (Komunikasi Darat - Udara) / Aeronautical Mobile Services

1. Umum
   a. Radiotelephony dan atau data link harus digunakan untuk komunikasi air - ground untuk tujuan pemeberian pelayanan lalu lintas udara dan harus menyediakan serta terus mengawasi frequency 121.5 Mhz.
   b. Saat percakapan dua arah atau komunikasi data link digunakan untuk tujuan pelayanan lalu lintas udara, fasilitas rekaman harus disediakan (Annex 10 Vol II, 3.5.1.5).
   c. Rekaman komunikasi minimal tidak boleh dihapus dalam 30 hari.

2. Untuk flight information service
   a. Fasilitas air – ground comm., harus bisa digunakan untuk komunikasi dua arah, untuk unit yang memberikan, untuk unit yang memberikan flight information service dan terpasang di pesawat di FIR manapun.
   b. Jika memungkinkan, fasilitas air ground harus bisa digunakan untuk berkomunikasi langsung, cepat dan berkelanjutan.

3. Untuk area control service
   a. Fasilitas air ground communication harus dapat digunakan untuk komunikasi dua arah diletakkan atau dimana area control service diberikan dan tentunya dipasang peralatan di pesawat.
   b. Saat memungkinkan.
c. Jika komunikasi air ground menggunakan suara, channel yang digunakan harus cocok untuk komunikasi langsung.

4. Untuk *approach control service*

   a. Fasilitas komunikasi udara ke darat harus bersifat langsung, cepat dan terus menerus dan bebas hambatan berkomunikasi dua arah hal ini antara penyedia pelayananan APP dan pesawat di wilayah pelayanannya.

   b. Ketika unit penyedia pelayanan APP menjadi unit yang terpisah, komunikasi udara ke darat sebaiknya digunakan secara eksklusif.

5. Untuk pelayanan di Bandara oleh Tower

   a. Fasilitas komunikasi udara ke darat sebaiknya langsung, cepat dan terus menerus dan bebas hambatan komunikasi dua arah untuk pemberi pelayanan di Bandara dan fasilitas ini sebaiknya menjangkau 45 km (25nm) dari Bandara di maksud.

   b. Jika memungkinkan *channel* komunikasi terpisah harus disediakan untuk ATC yang melayani di area pergerakan.

170.049 **Pelayanan Aeronautika Bersifat Tetap (Komunikasi Darat - Darat)**

/Aeronautical Fixed Service

1. Umum

   a. Komunikasi langsung ataupun datalink harus digunakan untuk komunikasi darat ke darat dalam rangka komunikasi dalam pelayanan ATS

   1) Indikasi oleh waktu dan kecepatan dalam berkomunikasi harus di jelaskan dalam panduan berkomunikasi, dalam hal ini juga harus dijelaskan tipe dan channel yang digunakan untuk berkomunikasi sebaiknya komunikasi bersifat instan, hal ini dimaksudkan untuk mencapai komunikasi yang efektif dan untuk menyediakan komunikasi yang cepat antar ATC yaitu 50
detik untuk papan pengalihan dan 5 menit untuk mengerti metode yang terkait dengan transmisi ulang.

2) Aturan untuk otomatis perekam komunikasi ATC terdapat pada CASR 171

b. Ketika tipe RCP telah di jelaskan oleh pemerintah untuk fungsi ATM, ATS unit harus memenuhi requiremen seperti dijelaskan dalam paragraph a) dan juga bisa menyediakan peralatan yang bisa membuat ATS ubat melaksanakan tipe-tipe RCS.

Informasi RCP dan prosedur terkait dan panduan terkait proses penyetujuan, terdapat dalam dokumen 9869, dalam dokumen ini juga mengandung keterkaitan dengan dokumen lain yang dikeluarkan oleh pemerintah dan badan internasional terkit system komunikasi dan RCP.

2. Komunikasi dengan FIR

a. Komunikasi antar ATS unit

1) FIC harus memiliki fasilitas untuk komunikasi dengan unit penyedia pelayanan tersebut diwilayahnya

   a) ACC
   b) APP
   c) ADC

2) ACC, dalam rangka hubungannya dengan FIC seperti tersebut di paragraph (i), seharusnya memiliki fasilitas komunikasi dengan dengan unit-unit penyedia ATS di wilayahnya

   a) Unit APP
   b) Unit Tower
   c) ATS reporting offices,jika terpisah
3) APP unit dalam kerangka hubungannya dengan FIC dan ACC seperti dijelaskan paragraph (i) dan (ii), sebaiknya memiliki fasilitas komunikasi dengan unit tower terkait dan jika terpisah juga dengan Air Traffic Reporting Office.

4) Unit Tower, dalam kerangka hubungannya dengan FIC, ACC dan APP seperti tersebut dalam paragraph (i),(ii) dan (iii), sebaiknya memiliki fasilitas komunikasi dengan ATS reporting Office jika unitnya terpisah.

b. Komunikasi antara ATS unit dengan unit lain

1) FIC dan ACC sebaiknya memiliki fasilitas komunikasi dengan beberapa unit penyedia pelayanan dengan respek dan tanggung jawab.

   a) dengan unit Militer.
   b) dengan Meteorologi.
   c) dengan stasiun pusat telkomunikasi aeronautika.
   d) Kantor Operator.
   e) dengan RCC.
   f) dengan Notam Office.

2) APP unit dan unit Tower harus memiliki fasilitas untuk komunikasi dengan beberapa unit penyedia pelayanan dengan respek dan tanggung jawab

   a) dengan Militer Unit.
   b) dengan tim rescue (ambulan dan PK-PPK dll).
   c) dengan kantor meteorology.
   d) dengan Pusat pelayanan telekomunikasi Aeronautika.
   e) dengan unit Aprom Managemen servis, jika terpisah.
3) Fasilitas Komunikasi seperti tersebut di paragraph 1) a) dan 2) a) harus cepat dan terbaca, seperti komunikasi dengan unit militer dan unit ATS terkait.

c. Deskripsi Fasilitas Komunikasi

1) Fasilitas Komunikasi seperti tersebut di paragraph a, b, 1) a) dan b, 2) a) b) (c) harus mencakup atas:

a) Komunikasi langsung tersendiri, atau kombinasi dengan menggunakan datalink, untuk kepentingan transfer komunikasi, dalam kerangka transfer control menggunakan radar atau ADS-B, komunikasi dapat terjalin secara cepat.

b) komunikasi tercetak, ketika rekaman terekam, pesan harus terkirim tidak lebih dari 5 menit.

2) Dalam setiap kasus yang tidak terdapat dalam paragraph (i), fasilitas komunikasi harus mencakup:

a) komunikasi langsung tersendiri, atau dengan kombinasi dengan datalink, ketika komunikasi sebaiknya terjalin secara cepat yaitu 15 menit.

b) komunikasi tercetak, ketika rekaman tertulis pesan dapat terkirim untuk berbagai komunikasi dengan tidak lebih dari 5 menit.

3) Dalam setiap kasus ketika otomatis transfer atas data dari atau ATS computer, sebaiknya disediakan rekaman.

4) Fasilitas komunikasi seperti tersebut di paragraph 2) a) dan b) harus ditambahkan, dan jika diperlukan, menggunakan fasilitas dalam berbagai bentuk visual atau audio, untuk contoh, CCTV atau system informasi terpisah.

5) Fasilitas Komunikasi seperti tersebut di paragraph b 2) a), b) dan c) harus menjelaskan komunikasi secara langsung ataupun konferensi atau pertemuan.
6) Komunikasi dapat terjalin dengan normal dalam 15 detik

7) semua fasilitas untuk direct-speech atau komunikasi data link antara unit ATS dan antara unit ATS dan unit lain seperti digambarkan pada b) 1) dan 2) sebaiknya dilengkapi dengan data perekam otomatis.

8) perekaman data dan komunikasi seperti disebutkan pada paragraf 3) dan 7) sebaiknya dapat disimpan untuk dalam jangka waktu 30 (tiga puluh) hari.

3. Komunikasi antara Flight Information Region (FIR)

a. Flight Information Centre (FIC) dan Area Control Cente (ACC) sebaiknya memiliki fasilitas untuk komunikasi dengan semua batasan FIC dan ACC.

1) Fasilitas komunikasi ini sebaiknya dalam setiap kondisi dimana termasuk ketetapan untuk pesan-pesan dalam sebuah form yang sesuai untuk penyimpanan rekaman yang permanen dan dikirimkan berdasarkan waktu lintasan (transit time) yang disesuaikan dengan persetujuan wilayah navigasi udara (regional air navigation agreements).

2) Kecuali jika disebutkan pada dasar persetujuan wilayah navigasi udara (regional air navigation agreements), fasilitas untuk komunikasi antara ACC yang melayani wilayah pengaturan yang bersebelahan sebaiknya ditambahkan didalamnya termasuk ketetapan untuk direct speech dan jka memungkinkan komunikasi data link dengan perekam otomatis untuk tujuan perpindahan pengaturan / pengontrolan menggunakan radar, ADS-B atau ADS-C data, komunikasi dapat di bangun / dicapai dengan segera dan untu tujuan lain komunikasi dapat secara normal di bangun / di capai dalam waktu 15 (lima belas) menit.

3) Ketika dibutuhkan dengan perseujuan antara state concern untuk menghilangkan atau mengurangi kebutuhan untuk pencegatan (intercept) dalam keadaan menyimpang dari
lintasan (track) yang ditentukan, fasilitas untuk komunikasi antara batasan FIC atau ACC lain yang telah disebutkan pada point b diatas sebaiknya didalamnya termasuk ketetapan untuk komunikasi langsung sendiri, atau gabungan dari komunikasi data link. Fasilitas komunikasi sebaiknya dilengkapi dengan perekam otomatis.

4) fasilitas komunikasi di poin c sebaiknya dapat dicapai dalam waktu 15 (lima belas) detik.

b. Batasan ATS unit sebaiknya dihubungkan dalam setiap keadaan / kondisi dimana keadaan tertentu terjadi. Keadaan tertentu yang mungkin diakibatkan karena kepadatan lalu lintas, tipe dari pesawat terbang dan atau perilaku dimana wilayah udara diatur dan mungkin terjadi apabila control area dan atau control zone tidak dapat dicapai.

c. Kondis lokal dimanapun seperti yang diperlukan untuk menjinkan pesawat terbang untuk masuk kedala batasan control area departure, sebuah APP control unit dan ADC sebaiknya dihubungkan dengan batasan area dari pelayanan ACC.

d. fasilitas komunikasi pada paragraf 2 dan 3 sebaiknya didalamnya termasuk ketetapan untuk komunikasi dengan komunikasi langsung sendiri dapat digabungkan dengan komunikasi data link, dengan perekam otomatis, dimana untuk tujuan dari pemindahan kendali dengan menggunakan radar data ADS-B atau ADS-C, komunikasi dapat dicapai dengan cepat dan untuk tujuan lain komunikasi dapat dicapai dalam waktu 15 (lima belas) detik.

e. dalam setiap kasus dimana dibutuhkan perubahan data dari computer ATS secara otomatis, sebahnya disediakan fasilitas untuk perekam otomatis.

f. rekaman dari data dan komunikasi seperti yang disebutkan dalam paragraf e, sebaiknya dapat disimpan dalam jangka waktu minimal 30 (tiga puluh) hari.

4. Prosedur Komunikasi Langsung (Direct Speech)
Prosedur yang tepat untuk komunikasi langsung sebaiknya dikembangkan untuk dapat digunakan dengan segera dalam hubungan yang dibuat untuk setiap panggilan penting berdasarkan keselamatan pesawat udara dan gangguan jika diperlukan untuk panggilan yang kurang penting yang sedang berlangsung pada saat itu.

170.050 Pelayanan Pengaturan Pergerakan di Permukaan (Surface Movement Control Service)

1. Komunikasi untuk pengaturan pada kendaraan selain pesawat udara yang terdapat pada wilayah pergerak pada lapangan terbang.

   a. Fasilitas komunikasi radio dua arah sebaiknya diberikan untuk pelayanan ADC untuk mengatur kendaraan di area pergerakan kecuali dimana komunikasi dengan menggunakan sistem dari visual signal cukup memadai.

   b. Dimana kondisi dibenarkan, chanell komunikasi yang terpisah sebaiknya diberikan untuk mengatur kendaraan di area pergerakan. Fasilitas perekam otomatis sebaiknya disediakan di setiap saluran (channel).

   c. Rekaman komunikasi yang diperlukan seperti terdapat pada paragrap b sebaiknya disimpan untuk jangka waktu kurang lebih tiga puluh (30) hari.

170.051 Pelayanan Navigasi Radio Aeronautika

1. Merekam otomatis pada data pengawasan (surveillance)

   a. data pengawasan (surveillance) dari peralatan radar primary dan secondary atau sistem lainnya (contoh: ADS-B, ADS-C), digunakan sebagai bantuan untuk pelayanan lalu lintas udara, sebaiknya direkam secara otomatis untuk digunakan dalam investigasi kecelakaan dan kejadian, pencarian dan penyelamatan, evaluasi dan pelatihan pengaturan lalu lintas udara dan sistem pengawasan (surveillance).
b. rekaman otomatis sebaiknya disimpan untuk jangka waktu kurang lebih tiga puluh (30) hari. Apabila rekaman tersebut bersangkutan dengan investigasi kecelakaan dan kejadian, mereka sebaiknya menyimpan untuk jangka waktu yang lebih lama sampai jelas bahwa mereka tidak akan memerlukannya lagi.
Sub Part 170.F – INFORMASI YANG DIBUTUHKAN OLEH ATS

170.052 Informasi Meteorologi

1. Umum

a. Unit ATS menyediakan informasi terbaru dan ramalan informasi kondisi uaca terbaru sesuai kebutuhan. Informasi disediakan dalam satu form sebagai informasi yang diberikan oleh personil ATS kepada penggunanya.

b. Unit ATS meyediakan informasi terperinci tentang lokasi, luas vertikal, arah dan jarak pergerakan dari fenomena cuaca dalam suatu aerodrome, dan pada lokasi dimana pesawat menanmbah ketinggian (climb-out) dan area approach, yang mana posisi kritis suatu pesawat.

c. Ketika proses komputer tentang data penerbangan tersedia untuk air traffic services dalam format digital untuk digunakan oleh lalu lintas udara, muatan, format dan transmisi pengaturan harus disetujui antara otoritas meteorologikal dan otoritas ATS yang sesuai.

2. Flight Information Centres dan Area Control Centres

a. Flight Information Centres dan Area Control Centres akan disediakan informasi cuaca sesuai yang diuraikan dalam Annex 3, Appendix 9, 1.3, penekanan tertentu diberikan kepada kejadian itu atau mengharapkan kejadian perubahan cuaca secepat ini dapat ditentukan. Dan laporan ini dan ramalan akan meliputi bidang pengawasan atau daerah informasi penerbangan dari seperti area lain, area ditentukan atas dasar persetujuan penerbangan regional.

b. Flight Information Centres dan Area Control Centres akan disajikan pada interval pantas, dengan data tekanan sekarang untuk menentukan altimeter, untuk penempatan yang ditetapkan oleh flight information centres dan area control centres.

3. Unit yang menyediakan Approach Control Services
a. Unit yang menyediakan *Approach Control Services* akan disediakan bersama dengan informasi cuaca sesuai yang diuraikan pada *annex 3, Appendix 9, 1.2* untuk ruang udara dan bandara terkait. Laporan khusus dan perkembangan ramalan akan dikomunikasikan kepada unit yang menyediakan approach control service secepatnya, tanpa menantikan laporan rutin yang berikutnya atau ramalan dimana berbagai anemometer digunakan, indicator yang terkait dengan jelas ditandai untuk mengidentifikasi bagian dan runway yang dimonitor oleh masing-masing anemometer.

b. Unit yang menyediakan *approach control service* akan dilengkapi dengan data tekanan sekarang untuk menetukan altimeter, untuk penempatan yang ditetapkan oleh unit approach control service.

c. Unit *approach control service* untuk *final approach*, landasan pendaratan dan keberangkatan akan dilengkapi dengan display surface wind. Display akan dihubungkan dengan location pengamatan yang sama dan diberi sensor sama display yang sesuai di aerodrome control tower dan di stasiun meteorological dimana stasiun berada.

d. Unit *approach control service* untuk *final approach*, landasan pendaratan dan lepas landas pada aerodrome dimana mulai jarak runway visual range diperkirakan oleh alat sebagai instrumental dilengkapi dengan display yang dapat runway visual range. Display akan dihubungkan dengan lokasi yang sama tentang pengamatan dan diberi sensor sama seperti aerodrome control tower dan pada stasiun meteorologi.

e. Unit yang menyediakan *approach control service* untuk *final approach*, landing dan take off pada bandara dimana ketinggian awan diukur oleh instrumental harus dilengkapi dengan display yang dapat membaca tentang tingginya. Display akan dihubungkan dengan lokasi yang sama tentang pengamatan dan diberi sensor samaseperti aerodrome control tower dan pada stasiun meteorologi.
f. Unit yang menyediakan approach control service untuk final approach, pedaratan dan keberangkatan disediakan bersama dengan wind shear yang bisa mempengaruhi pesawat pada approach atau posisi lepas landas atau selama circling approach.

4. Aerodrome Control Tower

a. Aerodrome Control Tower dilengkapi dengan informasi cuaca seperti yang diuraikan Annex 3, Appendix 9, 1.1 untuk aerodrome terkait. Laporan khusus dan ammendements ramalan akan dikomunikasikan kapada aerodrome control tower secepatnya, tanpa menunggu untuk laporan rutin yang berikutnya atau ramalan.

b. Aerodrome Control Tower akan dilengkapi dengan data tekanan sekarang untuk menentukan altimeter untuk pengguna jalan.

c. Aerodrome Control Tower akan dilangkapi dengan display surface wind. Display tersebut akan dihubungkan dengan lokasi yang sama tentang pengamatan dan diberi sensor yang sama sesuai display di stasiun meterologi dimana stasiun itu berada jika sensor digunakan display akan mengidentifikasi penggunaan runway.

d. Aerodrome Control Tower pada aerodrome dimana nilai jarak runway visual diukur oleh alat dilengkapi dengan display yang dapat membaca jarak pengamatan landasan terbang. Display akan dihubungkan dengan yang location sama tentang pengamatan dan diberi dari sensor yang sama seperti display yang sesuai pada stasiun meteorologi dimana stasiun berada.

e. Aerodrome Control Tower pada aerodrome dimana tingginya awan ditaksir oleh alat sebagai instrumental harus dilengkapi dengan display yang dapat membaca tentang tingginya awan. Display harus dihubungkan dengan lokasi yang sama tentang pengamatan dan diberi dari sensor yang sama seperti display yang sesuai pada stasiun meteorology dimana stasiun berada.

f. Aerodrome Control Tower disediakan dengan informasi wind shear yang bisa mempengaruhi pesawat pada saat approach atau take off atau selama circling approach dan pada pesawat sebelum kedatangan atau keberangkatan.
g. Aerodrome Control Tower dan atau unit lain yang terkait harus disediakan aerodrome.

5. Stasiun komunikasi dimana sebagai informasi penerbangan, laporan cuaca dan ramalan cuaca disediakan stasiun komunikasi. Salinan seperti informasi tersebut akan disampaikan kepada flight information centre atau Area Control Centre.

170.053 Formasi pada Kondisi-Kondisi Lapangan Terbang dan Status Fasilitas Operasional

Aerodrome Control Tower dan unit yang menyediakan approach control service akan menginformasikan kondisi penting di area pergerakan, mencakup keberadaan resiko sementara, dan status operasional tentang segala fasilitas lapangan terbang terkait.

170.054 Informasi pada Operasional Peralatan Navigasi

ATS unit menjaga informasi status operasional pada peralatan navigasi non visual dan visual yang penting bagi keberangkatan. Keberangkatan, approach dan prosedur landing di dalam area tanggung jawab mereka dan visual dan non visual aids penting bagi surface movement.
Informasi pada status operasional dan perubahan tentang peralatan visual dan non visual tercantum pada 7.3.1 harus diterima oleh unit ATS yang sesuai pada waktu yang tepat konsisten dengan penggunaan peralatan yang dilibatkan.

170.055 Informasi Balon Udara

Operator balon udara akan memberikan informasi ke ATS unit sesuai pada Annex 2.

170.056 Informasi Mengenai Aktivitas Volkanis

ATS unit akan diberitahukan, sesuai persetujuan lokal, tentang pergerakan bencana gunung api, letusan volkanis dan abu volkanis yang bias mempengaruhi airspace yang digunakan oleh penerbangan di dalam area tanggung jawab mereka.
Area Control Centres dan Flight Information Centres akan dilengkapi dengan informasi tentang bencana gunung api dikeluarkan oleh VAAC.
170.057 Informasi Mengenai Bahan Radioaktif dan "Awan" Kimia Beracun

ATS unit akan diberitahukan, berkenaan dengan persetujuan lokal, tentang pelepasan ke dalam atmosfir pada bahan radioaktif atau bahan-kimia beracun seperti awan yang bisa mempengaruhi ruang udara yang digunakan oleh penerbangan di dalam area tanggung jawab mereka.
Sub Part 170.G – Fasilitas Pelayanan Lalu Lintas Udara

170.058 UMUM

Fasilitas ATS bagian dari melayani institusi masyarakat yang disajikan oleh pemerintah, tingkat kepantasan fungsional, ketepatan dan kenyamanan harus sesuai dengan institusi jabatan dalam pemerintahan secara umum. Bagaimanapun, fakta pada tingkatan ini harus sesuai dari Negara ke Negara atau dalam Negara sendiri, tidak hanya tergantung pada situasi ekonomi yang spesifik, tetapi juga pada kondisi climatological, kebiasaan dan kondisi.

170.059 Navigasi yang Berpusat di Darat (Ground Based Navigation), Pengawasan dan Peralatan serta Peralatan Komunikasi

agar berfungsi dengan baik, ATC system memerlukan berbagai materi peralatan. Jenis dan jumlah peralatan ini akan berbeda menurut permintaan baik dibenarkan dalam system. Unsur – unsur dari peralatan biasanya diinstal sesuai langkah-langkah dan sebanding dengan peningkatan dalam permintaan yang terjadi pada saat digunakan ATS. Seperti memperoleh keuntungan dari mengurangi beban ekonomi administrasi dengan system atau biaya perluasan. Juga mengurangi efek waktu yang kritis pada perekrutan personil, pemilihan dan pelatihan penting bagi instalasi peralatan, pemeliharaan dan operasi. Aktivitas, material dan unsur-unsur lain dihubungkan dengan biaya tersembunyi meliputi: survei lokasi; didapatnya lokasi; persiapan lokasi; persiapan spesifikasi peralatan; negosiasi kontrak; peralatan inspection sebelum penerimaan teknis; instalasi; system evaluasi (penerimaan operasional) mencakup biaya-biaya pemeriksaan penerbang untuk pesawat dan crew; memonitor peralatan tambahan; peralatan standby dan/atau persediaan file-safe atau file-soft; menginventarisir suku cadang atau alternative yang pantas seperti penggantian dapat dipercaya cepat dari sumbernya; pemeliharaan bagi peralatan; training operasi dan personil maintenance; manual operasi dan pemeliharaan peralatan. Peralatan jenis mayor berhubungan dengan pelayanan ATC meliputi: very high freq. omni-directional range (VOR); non-directional radio beacon(NDB);long range radio nav. Aids; peralatan komunikasi; radar sekunder dan primary; peralatan presentasi radar (display); sistem
automasi; *instrument landing system* (ILS); *very high freq direction finding* (VDF).

**170.060 Persyaratan Operasional ATS**

1. Setiap ATS unit, harus memberikan pemandu *(controller)* lingkungan kerja yang nyaman dan peralatan yang sesuai.

2. Lingkungan harus aman dan nyaman dan diusahakan pemanasan yang cukup, ventilasi, dan yang sesuai dengan iklim, proses pengaturan suhu AC. Ruang kerja yang cukup.


4. Lingkungan harus jauh dari kebisingan agar tidak mengganggu dari konsentrasi.

5. Peralatan yang sesuai dengan tingkat kemampuan controller dan untuk berkomunikasi dengan pesawat, dan dengan para rekan kerjanya, ATS unit lain, personil maintenance (teknisi), unit penguna jasa lain, seperti: *airline* atau *aeronautical information service* (AIS), dll. Dalam item ini seperti fasilitas penerangan, radio dan telepon.

**170.061 Persyaratan Struktural ATS**

1. Bangunan Khusus atau bagian dari bangunan yang digunakan oleh ATS harus dirancang spesific untuk kebutuhan ATS unit terkait.

2. Bangunan harus cukup tahan lama sehingga diharapkan mampu menampung dan harus mampu untuk mengakomodasi semua personil material dan pengunjung. Pada masing-masing tingkatan harus cukup baik untuk mendukung semua peralatan dan orang- orang struktur tahan api.

3. Disain perlu mempertimbangkan fleksibilitas dalam mengakomodasi fasilitas posisi kerja controller dan / atau telepon. Perlu mempertimbangkan kemampuan perluasan dalam rangka
mengakomodasi peralatan baru, administratif atau operasional atau tambahan.

4. Kekuatan yang untuk mengantisipasi peralatan (radar, data automation, dll), pencahayaan, pemanasan, fentilasi, dll. Mencakup radio dan peralatan telepon, harus dapat menghubungkan ke power supply, backup generator listrik dan/atau sumber power tersebut.


6. Struktur bangunan yang tinggi, dengan menyediakan elevator yang berfungsi digunakan untuk personil maupun muatan lain. Ruang yang sesuai dengan penggunaannya atau tempat yang cukup untuk peralatan yang besar.


170.062 Fasilitas untuk ATS

Menyediakan ruang area operasi, bangunan ATS unit harus menyediakan suatu ruang untuk breafing room, kantor administratif, ruang perbaikan peralatan, ruang lemari(locker), gudang persediaan administratif, gudang peralatan teknis, fasilitas ruang bersantai/sofa dengan fasilitas alat memasak fasilitas kamar mandi, kran panas dan dingin, air minum dingin (jika kran air minum tidak tersedia), pencahayaan di luar dan wilayah parkir kendaraan.

170.063 Ukuran Keamanan ATS

1. Ukuran keamanan dan prosedur akan diperlukan pada tempat operasi lalu lintas udara (ATC) diselenggarakan. Tempat itu harus dijaga dari orang yang tidak berkepentingan.
2. Kebutuhan ini berlaku sama bagi bangunan operasi ATS dalam suatu multi-tenant. Seperti pada bangunan control sebagai akses keperluan ATS.

3. Ukuran keamanan dapat dimonitor melalui kamera keamanan yang dapat dimonitor oleh petugas keamanan dari pos keamanan dan/atau kunci keamanan yang dioperasikan oleh kunci khusus atau kartu kode.

170.064 Sistem ATS Lanjutan

1. Terlepas dari ground-ground yang dapat dipercaya serta cukup dan air ground komunikasi, unit pengatur lalu lintas udara (ATC) menerapkan metode control konvensional secara komperatif untuk peralatan dan alat tambahan.

2. Pengalaman telah menunjukan bahwa jika controller menerima pelatihan cukup dan social dan kondisi keja layak memuaskan, ATC unit akan mampu menangani sejumlah traffic sebelum air traffic service ATS diperkenalkan system yang lebih maju.
Sub part 170.H - LAPORAN DAN INVESTIGASI ATS

170.065 Umum

1. Keadaan yang menyebabkan sesuatu dan terhadap pemeliharaan keamanan pesawat dan seperti periode penting bagi tujuan suatu penyelidikan.

2. Suatu kejadian serius yang melibatkan lalu lintas udara seperti dekatnya pesawat terbang (AIRPROX) atau suatu kesukaran serius disebabkan oleh kesalahan prosedur, atau ketidakpatuhan terhadap prosedur atau kegagalan fasilitas menghasilkan resiko ke pesawat yang akan diselidiki;

3. Laporan peristiwa lalu lintas udara dan ATS penyelidikan prosedur harus dibentuk dalam rangka memastikan keselamatan dan standar tinggi dalam melakukan dan control lalu lintas udara.

170.066 Prosedur Pelaporan

1. laporan incident diidentifikasi dan diketahui sbb:

   a. Jenis insiden:

      1) dekatnya pesawat;

      2) kasus kesukaran serius disebabkan oleh kesalahan dalam melakukan prosedur atau tidak memenuhi prosedur;

      3) kesukaran serius disebabkan oleh kegagalan atau landasan;

      4) kegagalan dalam operasional;

      5) penyimpangan operasional.

   b. Tanda insiden:

      1) AIRPROX;

      2) prosedur;

      3) fasilitas;

      4) kesalahan operasional;
5) penyimpangan operasional.

2. Laporan Pilot

Proses yang dilakukan oleh pilot dalam keadaan incident sebagai berikut:

a. Selama penerbangan, menggunakan frekuensi untuk melaporkan kondisi suatu insiden, terutama jika melibatkan pesawat lain, agar penanganan secara cepat;

b. Sesegera mungkin setelah landing menyampaikan suatu foam laporan insiden:
   
   1) Untuk mengkonfirmasi laporan incident sesuai pada point (a diatas, atau untuk membuat laporan insiden jika belum melaporkannya dalam freq radio: dan

   2) Untuk melaporkan insiden yang tidak memerlukan pemberitahuan segera pada saat kejadian.

c. Laporan awal yang dilaporkan di radio harus berisi informasi sebagai berikut:

   1) Identifikasi pesawat.
   2) Jenis kecelakaan (AIRPROX, PROSEDUR, FASILITAS, dll).
   3) Tanggal/waktu dan pisisi incident (UTC).
   4) Arah heading dan rute, true air speed, level dan altimeter setting, climbing, descending or level flight.
   5) Menghindari tindakan yang diambil inisiatif sendiri.
   6) Tipe pesawat dan call sign, jika tidak mengetahui.
   7) Mendeskripsikannya.
   8) Pesawat climb, descent atau ketinggian pesawat.
   9) Menghindarkan tindakan yang diambil sama seperti pesawat lawan.
   10) Jarak terhadap pesawat lain.
11) Member informasi aerodrome pertama landing dan tujuan aerodrome

d. Laporan insiden yang ada di frekuensi radio harus disampaikan oleh pilot kepada kantor ATS dimana pesawat mendarat. Pilot melengkapi laporan secara detil tentang insiden yang terekam frekuensi radio.

Catatan: Apabila tidak ada kantor ATS untuk melaporkan kejadian tersebut, laporan tersebut disampaikan ke unit ATS terdekat.

3. Laporan ATS

a. Suatu insiden dalam unit ATC harus mengikuti proses sebagai berikut:

1) Mengidentifikasi dan menangani incident tersebut sesuai prosedur secara terperinci.

2) ATS unit yang bertanggung jawab pada pesawat incident ditentukan oleh posisi pesawat tersebut terjadi atau wilayah ATS unit dimana pesawat tersebut mendarat sesuai laporan pilot.

3) Jika pesawat tujuan domestic, ATS unit pada tujuan tersebut harus mendapatkan laporan dimana pesawat tersebut mendarat.

4) Jika pesawat tujuan internasional, ATS otoritas tujuan tersebut harus memberikan laporan secara detil tentang incident tersebut (menggunakan AFTN) dan meminta laporan incident kepada pilot.

5) Direktorat Jenderal Perhubungan Udara harus membuat catatan dan memberitahukan incident (dengan AFTN) secara detil.

6) Jika pesawat melibatkan pesawat lain, tindakan serupa akan dilakukan kepada kedua pihak.

7) Melengkapi formulir laporan insiden.

8) Memastikan bahwa yang berwenang terhadap kecelakaan/insiden dan otoritas ATS nasional diberitahukan tentang kejadian tersebut.
b. Controller melaporkan incident kepada ATS unit sesuai yang terkam pada freq radio, telepon atau telex.

170.67 Penyelidikan dan Dokumentasi

1. Secepatnya mengumpulkan dokumen pada insiden tersebut termasuk rekaman peristiwa tersebut. Controller, supervisor dan pegawai yang bertugas pada ATS unit mengumpulkan dokumen serta informasi tentang kejadian tersebut.

2. ATS melakukan penyelidikan secara normal terhadap kejadian tersebut. ATS unit akan memperoleh informasi yang berikut:
   a. Kesaksian personil yang bertugas
   b. Catatan rekaman radio dan komunikasi telepon
   c. Salinan flight progress strip dan data relevan lain, termasuk merekam data radar, jika tersedia
   d. Salinan laporan cuaca dan ramalan cuaca
   e. Kesaksian teknisi mengenai kondisi peralatan, dan
   f. Penyelesaian ditemukan dan rekomendasi, jika sesuai.

3. Team penyelidik harus meliputi:
   a. Petugas senior Direktorat Jenderal Perhubungan Udara sebagai petugas regu, pegawai ATS unit yang bertugas pada kejadian, senior ATS, atau ATS QA officer/specialist, ATS expert, petugas spesialis dari operasi penerbangan lain, pegawai kalibrasi, teknisi telekomunikasi atau bidang lain yang diperlukan.
   b. Sebagai tambahan dan apabila perlu, controller yang terlibat pada peristiwa ikut dalam tim memberikan kesaksian pada peristiwa tersebut.
   c. Ketika dua unit dibatkan, kedua unit tersebut berpartisipasi dalam tim.
4. Cara kerja dari tim investigasi, merahasiakan semua dokumen pada kejadian. Fakta spesifik yang diperlukan oleh tim meliputi:

a. Nama dan posisi personil ATS yang betugas.

b. Laporan urutan peristiwa dengan format narasif.

c. Nama pilot dan operator, dan rincian pesawat.

d. Controller yang terlibat harus membuat laporan sebelum meninggalkan unit tersebut pada hari yang sama.

e. Laporan dari pilot terlibat, jika perlu, melalui operator kantor, dan

f. Membuka rekaman, flight progress strip dan data lain, termasuk rekaman data radar jika tersedia.

5. Laporan tim ATS investigasi ringkasan peristiwa dan penyebab kejadian:

a. Laporan berisi semua informasi, urutan kronologis, dan menyimpulkan hasil temuan, penyebab dan rekomendasi accident/incident demi mencegah terulangnya kembali.

Catatan: tindakan korektif yang direkomendasikan akan tercakup dilaporan.

b. Sasaran yang pokok penyelidikan adalah pencegahan kecelakaan kembali terulang, bukan untuk mencari kesalahan atau siapa yang bertanggung jawab.

Catatan: tim haruslah tidak membuat hukuman pada personil yang melakukan kesalahan sebab sasaran yang pokok dalam penyelidikan adalah pencegahan kecelakaan, bukan mencari siapa yang salah.

c. Tambahan informasi yang disampaikan pada laporan:

1) Kesaksian personil yang terlibat.
2) Catatan relevan rekaman komunikasi air ground dan ground ground.

3) Salinan laporan cuaca atau ramalan cuaca pada peristiwa.

4) Copy flight progress strip dan data relevan lain pada peristiwa, termasuk merekam data radar, jika tersedia.

5) Kesaksian teknisi mengenai status peralatan.


MENTERI PERHUBUNGAN

ttd

Ir. JUSMAN SYAFII DJAMAL

Salinan sesuai dengan aslinya
Kepala Biro Hukum dan KSLN

UMAR ARIS, SH, MM, MH
Pembina Tk. I (IV/b)
APPENDIX 1. PRINCIPLES GOVERNING THE IDENTIFICATION OF RNP TYPES 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 (Doc 9420).

1. Designators for ATS routes and RNP types

1.1 The purpose of a system of route designators and required navigation performance (RNP) type(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.— Prior to the global introduction of RNP, all references in this appendix to RNP also apply to area navigation (RNAV) routes, where navigation performance accuracy requirements have been specified.

Note 2.— Specifications governing the publication of RNP types are given in Annex 4, Chapter 7, and Annex 15, Appendix 1.

Note 3.— In relation to this appendix and for flight planning purposes, a prescribed RNP type 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 should, 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.

ANNEX 11

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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 authority 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 or the turn performance required on the route in question in accordance with the following:

a) for RNP 1 routes at and above FL 200, the letter Y to indicate that all turns on the route between 30 and 90 degrees shall be made within the allowable RNP tolerance of a tangential arc between the straight leg segments defined with a radius of 22.5 NM (e.g. A123Y(1));

b) for RNP 1 routes at and below FL 190, the letter Z to indicate that all turns on the route between 30 and 90 degrees shall be made within the allowable RNP tolerance of a tangential arc between the straight leg segments defined with a radius of 15 NM (e.g. G246Z(1));

c) the letter F to indicate that on the route or portion thereof advisory service only is provided;

d) 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”, “G”, “Y” or “Z” 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 Annexes 4 and 15.

Note 3.— The conditions under which States may specify the controlled turn performance referred to in 2.4 a) and b) are discussed in the Manual on Required Navigation Performance (RNP) (Doc 9613).

Appendix 1

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, States 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 States’ 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”, “G”, “Y” or “Z” specified in 2.4 above are used, the flight crew should not be required to use them in voice communications.

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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 should, whenever possible, be established with reference to ground-based radio navigation aids, preferably VHF or higher frequency aids.

1.2 Where such ground-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 should, 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 1100 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 States’ 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, the significant point shall be designated by a unique five-letter pronounceable “name-code”. This name-code designator then serves as the name as well as the coded designator of the significant point.

3.2 This name-code designator shall be selected so as to avoid any difficulties in pronunciation by pilots or ATS
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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 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 a State wishes to keep the allocation of specific name-codes for re-use at a different location, such name-codes shall not be used until after a period of at least six months.

3.5 States’ requirements for name-code designators shall be notified to the Regional Offices of ICAO for coordination.

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:

Appendix 2

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 should not necessarily determine its designation as a compulsory reporting point;
c) compulsory reporting points should 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 should not systematically be made mandatory for all flights in all circumstances. In applying this principle, particular attention shall be given to the following:

APP 2-2
a) high-speed, high-flying aircraft should not be required to make routine position reports over all reporting points established as compulsory for low-speed, low-flying aircraft;

b) aircraft transiting through a terminal control area should 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

(See Chapter 2, 2.12.3)

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

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.
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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
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
b) Coded designator: KODAP 2 A

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 ADOLA.

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 “L” 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 4.

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

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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 3. TABLES OF CRUISING LEVELS

The cruising levels to be observed when so required by this Annex are as follows:

a) in areas where, on the basis of regional air navigation agreements and in accordance with conditions specified therein, a vertical separation minimum (VSM) of 300 m (1 000 ft) is applied between FL 290 and FL 410 inclusive:

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<table>
<thead>
<tr>
<th>TRACK**</th>
<th>From 000 degrees to 179 degrees***</th>
<th>From 180 degrees to 359 degrees***</th>
</tr>
</thead>
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<tr>
<td><strong>IFR Flights</strong></td>
<td><strong>Altitude</strong></td>
<td><strong>FL</strong></td>
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</tr>
<tr>
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<td>1 100</td>
<td>1 000</td>
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* Except when, on the basis of regional air navigation agreements, a modified table of cruising levels based on a nominal vertical separation minimum of 300 m (1 000 ft) is prescribed for use, under specified conditions, by aircraft operating above FL 410 within designated portions of the airspace.

** Magnetic track, or in polar areas at latitudes higher than 70 degrees and within such extensions to those areas as may be prescribed by the appropriate ATS authorities, grid tracks as determined by a network of lines parallel to the Greenwich Meridian superimposed on a polar stereographic chart in which the direction towards the North Pole is employed as the Grid North.

*** Except where, on the basis of regional air navigation agreements, from 090 to 269 degrees and from 270 to 089 degrees is prescribed to accommodate predominant traffic directions and appropriate transition procedures to be associated therewith are specified.

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

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b) in other areas:

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<th>From 000 degrees to 179 degrees**</th>
<th>From 180 degrees to 359 degrees**</th>
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</thead>
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* Magnetic track, or in polar areas at latitudes higher than 70 degrees and within such extensions to those areas as may be prescribed by the appropriate ATS authorities, grid tracks as determined by a network of lines parallel to the Greenwich Meridian superimposed on a polar stereographic chart in which the direction towards the North Pole is employed as the Grid North.

** Except where, on the basis of regional air navigation agreements, from 090 to 269 degrees and from 270 to 089 degrees is prescribed to accommodate predominant traffic directions and appropriate transition procedures to be associated therewith are specified.

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

24/11/05

APP 3-2
# APPENDIX 4. ATS AIRSPACE CLASSES — SERVICES PROVIDED AND FLIGHT REQUIREMENTS

 *(Chapter 2, 2.6 refers)*

<table>
<thead>
<tr>
<th>Class</th>
<th>Type of flight</th>
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<th>Service provided</th>
<th>Speed limitation*</th>
<th>Radio communication requirement</th>
<th>Subject to an ATC clearance</th>
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<td>Air traffic control service</td>
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<td>VFR from IFR</td>
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<td>IFR from IFR</td>
<td>Air traffic control service, traffic information about VFR flights (and traffic avoidance advice on request)</td>
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<td>Air traffic control service and, as far as practical, traffic information about VFR flights</td>
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<td>Continuous two-way</td>
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<tr>
<td>VFR</td>
<td>Nil</td>
<td>Flight information service</td>
<td>250 kt IAS below 3 050 m (10 000 ft) AMSL</td>
<td>No</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>G</td>
<td>IFR</td>
<td>Nil</td>
<td>Flight information service</td>
<td>250 kt IAS below 3 050 m (10 000 ft) AMSL</td>
<td>Continuous two-way</td>
<td>No</td>
</tr>
<tr>
<td>VFR</td>
<td>Nil</td>
<td>Flight information service</td>
<td>250 kt IAS below 3 050 m (10 000 ft) AMSL</td>
<td>No</td>
<td>No</td>
<td></td>
</tr>
</tbody>
</table>

* 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. AERONAUTICAL DATA QUALITY REQUIREMENTS

### Table 1. Latitude and longitude

<table>
<thead>
<tr>
<th>Latitude and longitude</th>
<th>Accuracy</th>
<th>Integrity Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flight information region boundary points</td>
<td>2 km</td>
<td>$1 \times 10^{-3}$</td>
</tr>
<tr>
<td>P, R, D area boundary points (outside CTA/CTZ boundaries)</td>
<td>2 km</td>
<td>$1 \times 10^{-3}$</td>
</tr>
<tr>
<td>P, R, D area boundary points (inside CTA/CTZ boundaries)</td>
<td>100 m</td>
<td>$1 \times 10^{-5}$</td>
</tr>
<tr>
<td>CTA/CTZ boundary points</td>
<td>100 m</td>
<td>$1 \times 10^{-5}$</td>
</tr>
<tr>
<td>En-route nav aids and fixes, holding, STAR/SID points</td>
<td>100 m</td>
<td>$1 \times 10^{-5}$</td>
</tr>
<tr>
<td>Obstacles in Area 1 (the entire State territory)</td>
<td>50 m</td>
<td>$1 \times 10^{-3}$</td>
</tr>
<tr>
<td>Obstacles in Area 2 (the part outside the aerodrome/ heliport boundary)</td>
<td>5 m</td>
<td>$1 \times 10^{-5}$</td>
</tr>
<tr>
<td>Final approach fixes/points and other essential fixes/points comprising the instrument approach procedure</td>
<td>3 m</td>
<td>$1 \times 10^{-5}$</td>
</tr>
</tbody>
</table>

**Note 1.** — See Annex 15, Appendix 8, for graphical illustrations of obstacle data collection surfaces and criteria used to identify obstacles in the defined areas.

**Note 2.** — In those portions of Area 2 where flight operations are prohibited due to very high terrain or other local restrictions and/or regulations, obstacle data are to be collected in accordance with the Area 1 numerical requirements specified in Annex 15, Appendix 8, Table A8-2.

**Note 3.** — Implementation of Annex 15 provisions 10.6.1.1 and 10.6.1.2 concerning the availability, as of 20 November 2008 and 18 November 2010, of obstacle data according to Area 1 and Area 2 specifications, respectively, would be facilitated by appropriate advance planning for the collection and processing of such data.
### Table 2. Elevation/altitude/height

<table>
<thead>
<tr>
<th>Elevation/altitude/height</th>
<th>Accuracy Data type</th>
<th>Integrity Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Threshold crossing height, precision approaches</td>
<td>0.5 m calculated</td>
<td>$1 \times 10^{-4}$ critical</td>
</tr>
<tr>
<td>Obstacle clearance altitude/height (OCA/H)</td>
<td>as specified in PANS-OPS (Doc 8168)</td>
<td>$1 \times 10^{-5}$ essential</td>
</tr>
<tr>
<td>Obstacles in Area 1 (the entire State territory), elevations</td>
<td>30 m surveyed</td>
<td>$1 \times 10^{-3}$ routine</td>
</tr>
<tr>
<td>Obstacles in Area 2 (the part outside the aerodrome/heliport boundary)</td>
<td>3 m surveyed</td>
<td>$1 \times 10^{-5}$ essential</td>
</tr>
<tr>
<td>Distance measuring equipment (DME), elevation</td>
<td>30 m (100 ft) surveyed</td>
<td>$1 \times 10^{-5}$ essential</td>
</tr>
<tr>
<td>Instrument approach procedures altitude</td>
<td>as specified in PANS-OPS (Doc 8168)</td>
<td>$1 \times 10^{-5}$ essential</td>
</tr>
<tr>
<td>Minimum altitudes</td>
<td>50 m calculated</td>
<td>$1 \times 10^{-3}$ routine</td>
</tr>
</tbody>
</table>

Note 1.—See Annex 15, Appendix 8, for graphical illustrations of the obstacle data collection surfaces and criteria used to identify obstacles in the defined areas.

Note 2.—In those portions of Area 2 where flight operations are prohibited due to very high terrain or other local restrictions and/or regulations, obstacle data are to be collected in accordance with the Area 1 numerical requirements specified in Annex 15, Appendix 8, Table A6-2.

Note 3.—Implementation of Annex 15 provisions 10.6.1.1 and 10.6.1.2 concerning the availability, as of 20 November 2008 and 18 November 2010, of obstacle data according to Area 1 and Area 2 specifications, respectively, would be facilitated by appropriate advance planning for the collection and processing of such data.

### Table 3. Declination and magnetic variation

<table>
<thead>
<tr>
<th>Declination/variation</th>
<th>Accuracy Data type</th>
<th>Integrity Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>VHF NAVAID station declination used for technical line-up</td>
<td>1 degree surveyed</td>
<td>$1 \times 10^{-5}$ essential</td>
</tr>
<tr>
<td>NDB NAVAID magnetic variation</td>
<td>1 degree surveyed</td>
<td>$1 \times 10^{-3}$ routine</td>
</tr>
</tbody>
</table>
### Table 4. Bearing

<table>
<thead>
<tr>
<th>Bearing</th>
<th>Accuracy Data type</th>
<th>Integrity Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Airway segments</td>
<td>1/10 degree calculated</td>
<td>$1 \times 10^{-3}$ routine</td>
</tr>
<tr>
<td>En-route and terminal fix formations</td>
<td>1/10 degree calculated</td>
<td>$1 \times 10^{-3}$ routine</td>
</tr>
<tr>
<td>Terminal arrival/departure route segments</td>
<td>1/10 degree calculated</td>
<td>$1 \times 10^{-3}$ routine</td>
</tr>
<tr>
<td>Instrument approach procedure fix formations</td>
<td>1/100 degree calculated</td>
<td>$1 \times 10^{-5}$ essential</td>
</tr>
</tbody>
</table>

### Table 5. Length/distance/dimension

<table>
<thead>
<tr>
<th>Length/distance/dimension</th>
<th>Accuracy Data type</th>
<th>Integrity Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Airway segments length</td>
<td>1/10 km calculated</td>
<td>$1 \times 10^{-3}$ routine</td>
</tr>
<tr>
<td>En-route fix formations distance</td>
<td>1/10 km calculated</td>
<td>$1 \times 10^{-3}$ routine</td>
</tr>
<tr>
<td>Terminal arrival/departure route segments length</td>
<td>1/100 km calculated</td>
<td>$1 \times 10^{-5}$ essential</td>
</tr>
<tr>
<td>Terminal and instrument approach procedure fix formations distance</td>
<td>1/100 km calculated</td>
<td>$1 \times 10^{-5}$ essential</td>
</tr>
</tbody>
</table>
APPENDIX 9. TECHNICAL SPECIFICATIONS RELATED TO INFORMATION FOR AIR TRAFFIC SERVICES, SEARCH AND RESCUE SERVICES AND AERONAUTICAL INFORMATION SERVICES

(See Chapter 10 of this Annex.)

1. INFORMATION TO BE PROVIDED FOR AIR TRAFFIC SERVICES UNITS

1.1 List of information for the aerodrome control tower

The following meteorological information shall be supplied, as necessary, to an aerodrome control tower by its associated aerodrome meteorological office:

a) local routine and special reports, METAR and SPECI, TAF and trend forecasts and amendments thereto, for the aerodrome concerned;

b) SIGMET and AIRMET information, wind shear warnings and alerts and aerodrome warnings;

c) any additional meteorological information agreed upon locally, such as forecasts of surface wind for the determination of possible runway changes;

d) information received on volcanic ash cloud, for which a SIGMET has not already been issued, as agreed between the meteorological and ATS authorities concerned; and

e) information received on pre-eruption volcanic activity and/or a volcanic eruption as agreed between the meteorological and ATS authorities concerned.

1.2 List of information for the approach control unit

The following meteorological information shall be supplied, as necessary, to an approach control unit by its associated aerodrome meteorological office:

a) local routine and special reports, METAR and SPECI, TAF and trend forecasts and amendments thereto, for the aerodrome(s) with which the approach control unit is concerned;

b) SIGMET and AIRMET information, wind shear warnings and alerts and appropriate special air-reports for the airspace with which the approach control unit is concerned and aerodrome warnings;

c) any additional meteorological information agreed upon locally;

d) information received on volcanic ash cloud, for which a SIGMET has not already been issued, as agreed between the meteorological and ATS authorities concerned; and

e) information received on pre-eruption volcanic activity and/or a volcanic eruption as agreed between the meteorological and ATS authorities concerned.
1.3 List of information for the flight information centre

The following meteorological information shall be supplied, as necessary, to a flight information centre or an area control centre by its associated meteorological watch office:

a) METAR and SPECI, including current pressure data for aerodromes and other locations, TAF and trend forecasts and amendments thereto, covering the flight information region or the control area and, if required by the flight information centre or area control centre, covering aerodromes in neighbouring flight information regions, as determined by regional air navigation agreement;

b) forecasts of upper winds, upper-air temperatures and significant en-route weather phenomena and amendments thereto, particularly those which are likely to make operation under visual flight rules impracticable, SIGMET and AIRMET information and appropriate special air-reports for the flight information region or control area and, if determined by regional air navigation agreement and required by the flight information centre or area control centre, for neighbouring flight information regions;

c) any other meteorological information required by the flight information centre or area control centre to meet requests from aircraft in flight if the information requested is not available in the associated meteorological watch office, that office shall request the assistance of another meteorological office in supplying it;

d) information received on volcanic ash cloud, for which a SIGMET has not already been issued, as agreed between the meteorological and ATS authorities concerned;

e) information received concerning the accidental release of radioactive materials into the atmosphere, as agreed between the meteorological and ATS authorities concerned;

f) tropical cyclone advisory information issued by a TCAC in its area of responsibility;

g) volcanic ash advisory information issued by a VAAC in its area of responsibility; and

h) information received on pre-eruption volcanic activity and/or a volcanic eruption as agreed between the meteorological and ATS authorities concerned.

1.4 Supply of information to aeronautical telecommunications stations

Where necessary for flight information purposes, current meteorological reports and forecasts shall be supplied to designated aeronautical telecommunication stations. A copy of such information shall be forwarded, if required, to the flight information centre or the area control centre.

1.5 Format of information

1.5.1 Recommendation.— Local routine and special reports, METAR and SPECI, TAF and trend forecasts, SIGMET and AIRMET information, upper wind and upper-air temperature forecasts and amendments thereto should be supplied to air traffic services units in the form in which they are prepared, disseminated to other meteorological offices or received from other meteorological offices, unless otherwise agreed locally.

1.5.2 Recommendation.— When computer-processed upper-air data for grid points are made available to air traffic services units in digital form for use by air traffic services computers, the contents, format and transmission arrangements should be as agreed between the meteorological authority and the appropriate ATS authority. The data should normally be supplied as soon as is practicable after the processing of the forecasts has been completed.
2. INFORMATION TO BE PROVIDED FOR SEARCH AND RESCUE SERVICES UNITS

2.1 List of information

Information to be supplied to rescue coordination centres shall include the meteorological conditions that existed in the last known position of a missing aircraft and along the intended route of that aircraft with particular reference to:

a) significant en-route weather phenomena;
b) cloud amount and type, particularly cumulonimbus; height indications of bases and tops;
c) visibility and phenomena reducing visibility;
d) surface wind and upper wind;
e) state of ground, in particular, any snow cover or flooding;
f) sea-surface temperature, state of the sea, ice cover if any and ocean currents, if relevant to the search area; and
g) sea-level pressure data.

2.2 Information to be provided on request

2.2.1 Recommendation.— On request from the rescue coordination centre, the designated meteorological office should arrange to obtain details of the flight documentation which was supplied to the missing aircraft, together with any amendments to the forecast which were transmitted to the aircraft in flight.

2.2.2 Recommendation.— To facilitate search and rescue operations the designated meteorological office should, on request, supply:

a) complete and detailed information on the current and forecast meteorological conditions in the search area; and
b) current and forecast conditions en route, covering flights by search aircraft from and returning to the aerodrome from which the search is being conducted.

2.2.3 Recommendation.— On request from the rescue coordination centre, the designated meteorological office should supply or arrange for the supply of meteorological information required by ships undertaking search and rescue operations.

3. INFORMATION TO BE PROVIDED FOR AERONAUTICAL INFORMATION SERVICES UNITS

3.1 List of information

The following information shall be supplied, as necessary, to an aeronautical information services unit:

a) information on meteorological service for international air navigation, intended for inclusion in the aeronautical information publication(s) concerned.

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b) information necessary for the preparation of NOTAM or ASHTAM including, in particular, information on:

1) the establishment, withdrawal and significant changes in operation of aeronautical meteorological services. This information is required to be provided to the aeronautical information services unit sufficiently in advance of the effective date to permit issuance of NOTAM in compliance with Annex 15, 5.1.1 and 5.1.1.1;

2) the occurrence of volcanic activity; and

Note.— The specific information required is given in Chapter 3, 3.3.2 and Chapter 4, 4.8.

3) accidental release of radioactive materials into the atmosphere, as agreed between the meteorological and appropriate civil aviation authorities concerned; and

Note.— The specific information required is given in Chapter 3, 3.4.2 g).

c) information necessary for the preparation of aeronautical information circulars including, in particular, information on:

1) expected important changes in aeronautical meteorological procedures, services and facilities provided; and

2) effect of certain weather phenomena on aircraft operations.

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