



Civil Aviation Requirements

(CAR - 2)

For

RULES OF THE AIR

Second Edition

June 2013

Civil Aviation Authority of Nepal

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FOREWORD

Article 12 (Rules of the air) of the Convention on International Civil Aviation requires each contracting State to adopt measures to insure that every aircraft (irrespective of its nationality mark) flying over or manoeuvring within its territory shall comply with the rules and regulations relating to the flight and manoeuvring of aircraft there in force. Under the Convention, each Contracting State is required to keep its own regulations in these respects uniform, to the greatest possible extent, with those established from time to time under the Convention and is also required to ensure the prosecution of all persons violating the regulations applicable. Over the high seas, the rules in force as established under the Convention shall be followed.

In above respect, ICAO Annex -2 provides the Standards pertaining to the Rules of the Air which are required to be adopted by the Contracting State.

This Civil Aviation Requirements for Rules of the Air "CAR 2" has been enacted by Civil Aviation Authority of Nepal Pursuant to **Rule-82, Schedule-3 of Civil Aviation Regulation, 2058 (2002)**, in accordance with the International Standards of Annex -2 "Rules of the Air" to the Convention of International Civil Aviation for safety, regularity and efficiency of civil aviation in Nepal.



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(Director General)

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Amendments to CAR 2

Amendments	Source	Subject	Effective Date
1 st Edition	Enacted by Civil Aviation Authority of Nepal, pursuant to Rule-82, Schedule-3 of Civil Aviation Regulation-2058 (2002) incorporating tenth edition of ICAO Annex 2 (with amendment No. 39-40) SARPs for Rules of the Air	Civil Aviation Requirements for Rules of the Air	December 2008
2nd Edition	Incorporating Amendment No.41-43 of ICAO Annex 2 and all corrigenda on 1st edition	<ul style="list-style-type: none"> i. Amendment to a definition and Standard to align required navigation performance (RNP) and areanavigation (RNAV) terminology with the performance-based navigation (PBN) concept ii. Amendments to standard emergency hand signals for emergency communications between aircraft rescue and firefighting personnel and flight and/or cabin crews iii. Amendments to definitions.Excluded the not-applicable part of ICAO Annex 2 	June 2013
Amentment No.1	Civil Aviation Regulation 2058 (2002, 2nd Amendment 2070 (2013) Adoption of ICAO Annex-2	<p>Amendment to interception</p> <p>Visibility & distance from cloud minima</p> <p>Appendix-2 table of cruising levels</p>	<p>5th September 2014</p> <p>5th September 2014</p>

Amendments	Source	Subject	Effective Date
Amentment No.2	ICAO Annex-2	Area navigation (RNAV). Note; Instrument approach procedure. Note; Chapter 3:Parachute descents; Formation flights; Remotely piloted aircraft Chapter 4: Visual Flights; APPENDIX 4. REMOTELY PILOTED AIRCRAFT SYSTEMS ATTACHMENT A. INTERCEPTION OF CIVIL AIRCRAFT ATTACHMENT B. UNLAWFUL INTERFERENCE	26 January, 2016
Amentment No.3	Amendment No. 44-45 of ICAO Annex 2	Chapter 3: Adherence to current flight plan; Interception; APPENDIX 1: 2.SIGNALS FOR USE IN THE EVENT OF INTERCEPTION; 3. VISUAL SIGNALS USED TO WARN AN OR ABOUT TO ENTER A RESTRICTED, PROHIBITED OR DANGER AREA	November, 2016
Amendment No.4		Chapter 4: Visual Flight Rules	May, 2017
Amendment No. 5		Chapter 4: Visual Flight Rules	27 June, 2017
Amendment No. 6	Amd. No. 46 to ICAO Annex	Definition, Chapter 2, Appendix-4	Nov, 2018

DEFINITIONS

Note.— Throughout the text of this document the term “service” is used as an abstract noun to designate functions, or service rendered; the term “unit” is used to designate a collective body performing a service.

When the following terms are used in the Civil Aviation requirements for Rules of the Air, they have the following meanings:

Acrobatic flight. Manoeuvres intentionally performed by an aircraft involving an abrupt change in its attitude, an abnormal attitude, or abnormal variation in speed.

ADS-C agreement. A reporting plan which establishes the conditions of ADS-C data reporting (i.e. data required by the air traffic services unit and frequency of ADS-C reports which have to be agreed to prior to using ADS-C in the provision of air traffic services). *Note.— The terms of the agreement will be exchanged between the ground system and the aircraft by means of a contract, or a series of contracts.*

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

Automatic dependent surveillance — contract (ADS-C). A means by which the terms of an ADS-C agreement will be exchanged between the ground system and the aircraft, via a data link, specifying under what conditions ADS-C reports would be initiated, and what data would be contained in the reports. *Note.— The abbreviated term “ADS contract” is commonly used to refer to ADS event contract, ADS demand contract, ADS periodic contract or an emergency mode.*

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 maneuvering area of an aerodrome and all aircraft flying in the vicinity of an aerodrome.

Note.— An aircraft is in the vicinity of an aerodrome when it is in, entering or leaving an aerodrome traffic circuit.

Aerodrome traffic zone. An airspace of defined dimensions established around an aerodrome for the protection of aerodrome traffic.

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 station. A land station in the aeronautical mobile service. In certain instances, an aeronautical station may be located, for example, on board ship or on a platform at sea.

Aeroplane. A power-driven heavier-than-air aircraft, deriving its lift in flight chiefly from aerodynamic reactions on surfaces which remain fixed under given conditions of flight.

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

Aircraft. Any machine which can derive support in the atmosphere from the reactions of the air other than reactions of the air against the earth's surface and includes balloons whether fixed or free, airships, kites, gliders and flying machines.

Air-ground control radio station. An aeronautical telecommunication station having primary responsibility for handling communications pertaining to the operation and control of aircraft in a given area.

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.

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

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

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 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.

Note.— *ATS airspaces are classified in AIP Nepal ENR 1.4.*

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

Note.— *An air traffic services reporting office may be established as a separate unit or combined with an existing unit, such as another air traffic services unit, or a unit of the aeronautical information service.*

Air traffic services unit. A generic term meaning variously, air traffic control unit, flight information centre or air traffic services reporting office.

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

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

Alternate aerodrome. An aerodrome to which an aircraft may proceed when it becomes either impossible or inadvisable to proceed to or to land at the aerodrome of intended landing. 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.

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.

Note.— *The aerodrome from which a flight departs may also be an en-route or a destination alternate aerodrome for that flight.*

Altitude. The vertical distance of a level, a point or an object considered as a point, measured from mean sea level (MSL).

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.

Appropriate authority.

- a) Regarding flight over the high seas: The relevant authority of the State of Registry.
- b) Regarding flight other than over the high seas: The relevant authority of the State having sovereignty over the territory being overflown.

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.

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

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

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

Note.— Area navigation includes performance-based navigation as well as other operations that do not meet the definition of performance-based navigation.

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

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

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

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

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

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

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

Command and control (C2) link. The data link between the remotely piloted aircraft and the remote pilot station for the purposes of managing the flight.

Control area. A controlled airspace extending upwards from a specified limit above the earth.

Controlled aerodrome. An aerodrome at which air traffic control service is provided to Aerodrome traffic.

Note.— The term “controlled aerodrome” indicates that air traffic control service is provided to aerodrome traffic but does not necessarily imply that a control zone exists.

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

Note.— Controlled airspace is a generic term which covers ATS airspace.

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.

Cruise climb. An aeroplane cruising technique resulting in a net increase in altitude as the aeroplane mass decreases.

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

Current flight plan. The flight plan, including changes, if any, brought about by subsequent clearances.

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

Data link communications. A form of communication intended for the exchange of messages via a data link.

Detect and avoid. The capability to see, sense or detect conflicting traffic or other hazards and take the appropriate action.

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

Estimated time of arrival. For IFR flights, the time at which it is estimated that the aircraft will arrive over that designated point, defined by reference to navigation aids, from which it is intended that an instrument approach procedure will be commenced, or, if no navigation aid is associated with the aerodrome, the time at which the aircraft will arrive over the aerodrome. For VFR flights, the time at which it is estimated that the aircraft will arrive over the aerodrome.

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

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

Filed flight plan. The flight plan as filed with an ATS unit by the pilot or a designated representative, without any subsequent changes.

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.

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

- a) when set to a QNH altimeter setting, will indicate altitude;*
- b) when set to a QFE altimeter setting, will indicate height above the QFE reference datum;*
- c) when set to a pressure of 1013.2 hPa, may be used to indicate flight levels.*

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

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

Flight visibility. The visibility forward from the cockpit of an aircraft in flight.

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

Heading. The direction in which the longitudinal axis of an aircraft is pointed, usually expressed in degrees from North (true, magnetic, compass or grid).

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

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.

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

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

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

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

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

Note- Refer to FOR- Aeroplane for Instrument Approach Operations types.

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

Note.— The specified minima for visual meteorological conditions are contained para 2.4

Landing area. That part of a movement area intended for the landing or takeoff of aircraft.

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.

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

Night. Hours between the end of evening civil twilight and the beginning of morning civil twilight or such other period between sunset and sunrise, as may be prescribed by the appropriate authority. Civil twilight ends in the evening when the centre of the sun's disc is 6 degrees below the horizon and begins in the morning when the centre of the sun's disc is 6 degrees below the horizon.

Pilot-in-command. in respect of a pilot, -

(i) engaged in commercial operations means the pilot designated by the operator as being in command and charged with the safe conduct of a flight; and

(ii) engaged in general aviation or helicopter operations means the pilot designated by the operator or owner as being in command and charged with the safe conduct of a flight.

Pressure-altitude. An atmospheric pressure expressed in terms of altitude which corresponds to that pressure in the Standard Atmosphere.

Problematic use of substances. The use of one or more psychoactive substances by aviation personnel in a way that:

a) constitutes a direct hazard to the user or endangers the lives, health or welfare of others; and/or

b) causes or worsens an occupational, social, mental or physical problem or disorder.

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

Psychoactive substances. Alcohol, opioids, cannabinoids, sedatives and hypnotics, cocaine, other psychostimulants, hallucinogens, and volatile solvents, whereas coffee and tobacco are excluded.

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

Remote pilot. A person charged by the operator with duties essential to the operation of a remotely piloted aircraft and who manipulates the flight controls, as appropriate, during flight time.

Remote pilot station. The component of the remotely piloted aircraft system containing the equipment used to pilot the remotely piloted aircraft.

Remotely piloted aircraft (RPA). An unmanned aircraft which is piloted from a remote pilot station.

Remotely piloted aircraft system (RPAS). A remotely piloted aircraft, its associated remote pilot station(s), the required command and control links and any other components as specified in the type design

Repetitive flight plan (RPL). A flight plan related to a series of frequently recurring, regularly operated individual flights with identical basic features, submitted by an operator for retention and repetitive use by ATS units.

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

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

Runway. A defined rectangular area on a land aerodrome prepared for the landing and take-off of aircraft.

Runway-holding position. A designated position intended to protect a runway, an obstacle limitation surface, or an ILS/MLS critical/sensitive area at which taxiing aircraft and vehicles shall stop and hold, unless otherwise authorized by the aerodrome control tower.

Note : In radiotelephony phraseologies, the expression “holding Point” is used to designate the runway-holding position.

Safety-sensitive personnel. Persons who might endanger aviation safety if they perform their duties and functions improperly including, but not limited to, crew members, aircraft maintenance personnel and air traffic controllers.

Signal area. An area on an aerodrome used for the display of ground signals.

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

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

Taxiway. A defined path on a land aerodrome established for the taxiing of aircraft and intended to provide a link between one part of the aerodrome and another, including:

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

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

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

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

Total estimated elapsed time. For IFR flights, the estimated time required from take-off to arrive over that designated point, defined by reference to navigation aids, from which it is intended that an instrument approach procedure will be commenced, or, if no navigation aid is associated with the destination aerodrome, to arrive over the destination aerodrome. For VFR flights, the estimated time required from take-off to arrive over the destination aerodrome.

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.

Transition altitude. The altitude at or below which the vertical position of an aircraft is controlled by reference to altitudes.

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

Note.— Unmanned free balloons are classified as heavy, medium or light in accordance with specifications contained in Appendix 3.

VFR. The symbol used to designate the visual flight rules.

VFR flight. A flight conducted in accordance with the visual flight rules.

Visibility. Visibility for aeronautical purposes is the greater of:

a) the greatest distance at which a black object of suitable dimensions, situated near the ground, can be seen and recognized when observed against a bright background;

b) the greatest distance at which lights in the vicinity of 1000 candelas can be seen and identified against an unlit background.

Note 1.— The two distances have different values in air of a given extinction coefficient, and the latter b) varies with the background illumination. The former a) is represented by the meteorological optical range (MOR).

Note. 2.— The definition applies to the observations of visibility in local routine and special reports, to the observations of prevailing and minimum visibility reported in METAR and SPECI and to the observations of ground visibility.

Visual line-of-sight (VLOS) operation. An operation in which the remote pilot or RPA observer maintains direct unaided visual contact with the remotely piloted aircraft

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

Note.— The specified minima are contained para 2.4.

VMC. The symbol used to designate visual meteorological conditions.

2. APPLICABILITY OF THE RULES OF THE AIR

2.1 Territorial application of the rules of the air

2.1.1 This CAR is applicable to all aircraft flying over Nepalese Territory and aircraft bearing the Nepalese nationality and registration marks, wherever they may be, to the extent that they do not conflict with the rules published by the State having jurisdiction over the territory over flown.

Note.— The Council of the International Civil Aviation Organization resolved, in adopting Annex 2 in April 1948 and Amendment 1 to the said Annex in November 1951, that the Annex constitutes Rules relating to the flight and manoeuvre of aircraft within the meaning of Article 12 of the Convention. Over the high seas, therefore, these rules apply without exception.

2.2 Compliance with the Rules of the air

2.2.1 The operation of an aircraft either in flight or on the movement area of an aerodrome shall be in compliance with the general rules and, in addition, when in flight, either with:

- a) the visual flight rules, or
- b) the instrument flight rules.

Note 1. - Information relevant to the services provided to aircraft operating in accordance with both visual flight rules and instrument flight rules in the ATS airspace classes is contained in AIP Nepal ENR 1.2 and 1.3.

Note 2.— A pilot may elect to fly in accordance with instrument flight rules in visual meteorological conditions or may be required to do so by the appropriate ATS authority.

2.3 Responsibility for compliance with the rules of the air

2.3.1 Responsibility of pilot-in-command

The pilot-in-command of an aircraft shall, whether manipulating the controls or not, be responsible for the operation of the aircraft in accordance with the rules of the air, except that the pilot-in-command may depart from these rules in circumstances that render such departure absolutely necessary in the interests of safety.

2.3.2 Pre-flight action

Before beginning a flight, the pilot-in-command of an aircraft shall become familiar with all available information appropriate to the intended operation. Pre-flight action for flights away from the vicinity of an aerodrome, and for all IFR flights, shall include a careful study of available current weather reports and forecasts, taking into consideration fuel requirements and an alternative course of action if the flight cannot be completed as planned.

2.4 Authority of pilot-in-command of an aircraft

The pilot-in-command of an aircraft shall have final authority as to the disposition of the aircraft while in command.

2.5 Problematic use of psychoactive substances

No person whose function is critical to the safety of aviation (safety-sensitive personnel) shall undertake that function while under the influence of any psychoactive substance, by reason of which human performance is impaired. No such person shall engage in any kind of problematic use of substances.

3. GENERAL RULES

3.1 Protection of persons and property

3.1.1 Negligent or reckless operation of aircraft

An aircraft shall not be operated in a negligent or reckless manner so as to endanger life or property of others.

3.1.2 Minimum heights

Except when necessary for take-off or landing, or except by permission from the Director General, aircraft shall not be flown over the congested areas of cities, towns or settlements or over an open-air assembly of persons, unless at such a height as will permit, in the event of an emergency arising, a landing to be made without undue hazard to persons or property on the surface.

Note.— See 4.6 for minimum heights for VFR flights and 5.1.2 for minimum levels for IFR flights.

3.1.3 Cruising levels

The cruising levels at which a flight or a portion of a flight is to be conducted shall be in terms of:

- a) flight levels, for flights at or above the lowest usable flight level or, where applicable, above the transition altitude;
- b) altitudes, for flights below the lowest usable flight level or, where applicable, at or below the transition altitude.

Note.— The system of flight levels is prescribed in the Appendix 2.

3.1.4 Dropping or spraying

Nothing shall be dropped or sprayed from an aircraft in flight except under conditions prescribed by DGCA as indicated by relevant information, advice and/or clearance from the appropriate air traffic services unit.

3.1.5 Towing

No aircraft or other object shall be towed by an aircraft, except in accordance with requirements prescribed by the appropriate authority and as indicated by relevant information, advice and/or clearance from the appropriate air traffic services unit.

3.1.6 Parachute descents

Parachute descents, other than emergency descents, shall not be made except under conditions prescribed by the appropriate authority and as indicated by relevant information, advice and/or clearance from the appropriate air traffic services unit.

3.1.7 Acrobatic flight

No aircraft shall be flown acrobatically, except under condition prescribed by the DGCA and as indicated by relevant information, advice and/or clearance from the appropriate ATS unit.

3.1.8 Formation flights

No civil aircraft shall be flown in formation.

3.1.9 Remotely piloted aircraft

A remotely piloted aircraft shall be operated in such a manner as to minimize hazards to persons, property or other aircraft and in accordance with the conditions specified in Appendix 4.

3.1.10 Unmanned free balloons

An unmanned free balloon shall be operated in such a manner as to minimize hazards to persons, property or other aircraft and in accordance with the conditions specified in Appendix 3.

3.1.11 Prohibited areas and Restricted areas

Aircraft shall not be flown in a prohibited area, or in a restricted area, the particulars of which have been duly published, except in accordance with the conditions of the restrictions or by permission of the Director General.

3.2 Avoidance of collisions

Nothing in these rules shall relieve the pilot-in-command of an aircraft from the responsibility of taking such action, including collision avoidance manoeuvres based on resolution advisories provided by ACAS equipment, as well as avert collision.

Note 1.— It is important that vigilance for the purpose of detecting potential collisions be exercised on board an aircraft, regardless of the type of flight or the class of airspace in which the aircraft is operating, and while operating on the movement area of an aerodrome.

Note 2.— Carriage requirements for ACAS equipment are given in Flight Operation Requirement

3.2.1 Proximity

An aircraft shall not be operated in such proximity to other aircraft as to create a collision hazard.

3.2.2 Right-of-way

The aircraft that has the right-of-way shall maintain its heading and speed.

3.2.2.1 An aircraft that is obliged by the following rules to keep out of the way of another shall avoid passing over, under or in front of the other, unless it passes well clear and takes into account the effect of aircraft wake turbulence.

3.2.2.1 An aircraft that is obliged by the following rules to keep out of the way of another shall avoid passing over, under or in front of the other, unless it passes well clear and takes into account the effect of aircraft wake turbulence.

3.2.2.2 Approaching head-on. When two aircraft are approaching head-on or approximately so and there is danger of collision, each shall alter its heading to the right.

3.2.2.3 Converging. When two aircraft are converging at approximately the same level, the aircraft that has the other on its right shall give way, except as follows:

- a) power-driven heavier-than-air aircraft shall give way to airships, gliders and balloons;
- b) airships shall give way to gliders and balloons;
- c) gliders shall give way to balloons;
- d) power-driven aircraft shall give way to aircraft which are seen to be towing other aircraft or objects.

3.2.2.4 Overtaking. An overtaking aircraft is an aircraft that approaches another from the rear on a line forming an angle of less than 70 degrees with the plane of symmetry of the latter, i.e. is in such a position with reference to the other aircraft that at night it should be unable to see either of the aircraft's left (port) or right (starboard) navigation lights. An aircraft that is being overtaken has the right-of way and the overtaking aircraft, whether climbing, descending or in horizontal flight, shall keep out of the way of the other aircraft by altering its heading to the right, and no subsequent change in the relative positions of the two aircraft shall absolve the overtaking aircraft from this obligation until it is entirely past and clear.

3.2.2.5 Landing

3.2.2.5.1 An aircraft in flight, or operating on the ground or water, shall give way to aircraft landing or in the final stages of an approach to land.

3.2.2.5.2 When two or more heavier-than-air aircraft are approaching an aerodrome for the purpose of landing, aircraft at the higher level shall give way to aircraft at the lower level, but the latter shall not take advantage of this rule to cut in front of another which is in the final stages of an approach to land, or to overtake that aircraft. Nevertheless, power-driven heavier-than-air aircraft shall give way to gliders.

3.2.2.5.3 Emergency landing. An aircraft that is aware that another is compelled to land shall give way to that aircraft.

3.2.2.6 Taking off. An aircraft taxiing on the manoeuvring area of an aerodrome shall give way to aircraft taking off or about to take off.

3.2.2.7 Surface movement of aircraft

3.2.2.7.1 In case of danger of collision between two aircraft taxiing on the movement area of an aerodrome the following shall apply:

- a) when two aircraft are approaching head on, or approximately so, each shall stop or where practicable alter its course to the right so as to keep well clear;
- b) when two aircraft are on a converging course, the one which has the other on its right shall give way;
- c) an aircraft which is being overtaken by another aircraft shall have the right-of-way and the overtaking aircraft shall keep well clear of the other aircraft.

Note.— For the description of an overtaking aircraft see 3.2.2.4

3.2.2.7.2 An aircraft taxiing on the manoeuvring area shall stop and hold at all runway holding positions unless otherwise authorized by the aerodrome control tower.

Note.— For runway-holding position markings and related signs, see Annex 14, Volume I, 5.2.9 and 5.4.2.

3.2.2.7.3 An aircraft taxiing on the manoeuvring area shall stop and hold at all lighted stop bars and may proceed further when the lights are switched off.

3.2.3 Lights to be displayed by aircraft

Note 1.— The characteristics of lights intended to meet the requirements of 3.2.3 for aeroplanes are specified in Annex 8. *Specifications for navigation lights for aeroplanes are contained in the Appendices to Parts I & II of Annex 6. Detailed technical specifications for lights for aeroplanes are contained in Volume II of the Airworthiness Technical Manual (Doc 9760) and for helicopters in Part A Chapter 5 of that document.*

Note 2.— In the context of 3.2.3.2 c) and 3.2.3.4 a) an aircraft is understood to be operating when it is taxiing or being towed or is stopped temporarily during the course of taxiing or being towed.

3.2.3.1 Except as provided by 3.2.3.5, from sunset to sunrise or during any other period which may be prescribed by Director General all aircraft in flight shall display:

- a) anti-collision lights intended to attract attention to the aircraft; and
- b) navigation lights intended to indicate the relative path of the aircraft to an observer and other lights shall not be displayed if they are likely to be mistaken for these lights.

Note.— Lights fitted for other purposes, such as landing lights and airframe floodlights, may be used in addition to the anti-collision lights specified in the Airworthiness Technical Manual (Doc 9760) to enhance aircraft conspicuity.

3.2.3.2 Except as provided by 3.2.3.5, from sunset to sunrise or during any other period prescribed by the Director General,

- a) all aircraft moving on the movement area of an aerodrome shall display navigation lights intended to indicate the relative path of the aircraft to an observer and other lights shall not be displayed if they are likely to be mistaken for these lights;
- b) unless stationary and otherwise adequately illuminated, all aircraft on the movement area of an aerodrome shall display lights intended to indicate the extremities of their structure;

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- c) all aircraft operating on the movement area of an aerodrome shall display lights intended to attract attention to the aircraft; and
- d) all aircraft on the movement area of an aerodrome whose engines are running shall display lights which indicate that fact.

Note.— If suitably located on the aircraft, the navigation lights referred to in 3.2.3.1 b) may also meet the requirements of 3.2.3.2 b). Red anti-collision lights fitted to meet the requirements of 3.2.3.1 a) may also meet the requirements of 3.2.3.2 c) and 3.2.3.2 d) provided they do not subject observers to harmful dazzle.

3.2.3.3 Except as provided by 3.2.3.5, all aircraft in flight and fitted with anti-collision lights to meet the requirement of 3.2.3.1 a) shall display such lights also outside the period specified in 3.2.3.1

3.2.3.4 Except as provided by 3.2.3.5, all aircraft:

- a) operating on the movement area of an aerodrome and fitted with anti-collision lights to meet the requirement of 3.2.3.2 c); or
- b) on the movement area of an aerodrome and fitted with lights to meet the requirement of 3.2.3.2 d);

shall display such lights also outside the period specified in 3.2.3.2

3.2.3.5 A pilot shall be permitted to switch off or reduce the intensity of any flashing lights fitted to meet the requirements of 3.2.3.1, 3.2.3.2, 3.2.3.3 and 3.2.3.4 if they do or are likely to:

- a) adversely affect the satisfactory performance of duties; or
- b) subject an outside observer to harmful dazzle.

3.2.4 Simulated instrument flights

An aircraft shall not be flown under simulated instrument flight conditions unless:

- a) fully functioning dual controls are installed in the aircraft; and
- b) a qualified pilot occupies a control seat to act as safety pilot for the person who is flying under simulated instrument conditions. The safety pilot shall have adequate vision forward and to each side of the aircraft, or a competent observer in communication with the safety pilot shall occupy a position in the aircraft from which the observer's field of vision adequately supplements that of the safety pilot.

3.2.5 Operation on and in the vicinity of an aerodrome

3.2.5.1 An aircraft operated on or in the vicinity of an aerodrome shall, whether or not within an aerodrome traffic zone:

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- a) observe other aerodrome traffic for the purpose of avoiding collision;
 - b) conform with or avoid the pattern of traffic formed by other aircraft in operation;
 - c) make all turns to the left, when approaching for a landing and after taking off, unless otherwise instructed;
 - d) land and take off into the wind unless safety, the runway configuration, or air traffic considerations determine that a different direction is preferable.

3.2.5.2 When an aerodrome control tower is in operation at an aerodrome the Pilot-in-command shall also,

- a) maintain a continuous listening watch on the appropriate radio frequency of the aerodrome control tower unless under approach control service furnished by another Air Traffic Control unit and if this is not possible, keep a watch for such instructions as may be issued by visual signals, and
- b) obtain either by radio or by visual signals prior authorization for any manoeuvre preparatory to or associated with taxiing, landing or take off.

Note — See 3.6.5.1.

3.3 Flight plan

3.3.1 Submission of a flight plan

3.3.1.1 Information relative to an intended flight or portion of a flight, to be provided to air traffic services units, shall be in the form of a flight plan.

3.3.1.2 A flight plan shall be submitted prior to operating:

- a) any flight or portion thereof to be provided with air traffic control service;
- b) any IFR flight within advisory airspace;
- c) any flight within or into designated areas, or along designated routes, when so required by the appropriate ATS authority to facilitate the provision of flight information, alerting and search and rescue services;
- d) any flight within or into designated areas, or along designated routes, when so required by the appropriate ATS authority to facilitate co-ordination with appropriate military units or with air traffic services units in adjacent States in order to avoid the possible need for interception for the purpose of identification;
- e) any flight across International borders.

Note.— The term “flight plan” is used to mean variously, full information on all items comprised in the flight plan description, covering the whole route of a flight, or limited information required when the purpose is to obtain a clearance for a minor portion of a flight such as to cross an airway, to take off from, or to land at a controlled aerodrome.

3.3.1.3 A flight plan shall be submitted, before departure, to an air traffic services reporting office or, during flight, transmitted to the appropriate air traffic services unit or air ground control radio station, unless arrangements have been made for submission of repetitive flight plans

3.3.1.4 Unless otherwise prescribed by the appropriate ATS authority, a flight plan for a flight to be provided with air traffic control service or air traffic advisory service shall be submitted at least sixty minutes before departure, or, if submitted during flight, at a time which will ensure its receipt by the appropriate air traffic services unit at least ten minutes before the aircraft is estimated to reach:

- a) the intended point of entry into a control area or advisory area; or
- b) the point of crossing an airway or advisory route.

3.3.2 Contents of a flight plan

A flight plan shall comprise information regarding such of the following items as are considered relevant by the appropriate ATS authority:

- Aircraft identification
- Flight rules and type of flight
- Number and type(s) of aircraft and wake turbulence category

- Equipment
- Departure aerodrome (see Note 1)
- Estimated off-block time (see Note 2)
- Cruising speed(s)

- Cruising level(s)

- Route to be followed
- Destination aerodrome and total estimated elapsed time
 - Alternate aerodrome(s)

- Fuel endurance
- Total number of persons on board
- Emergency and survival equipment
- Other information.

Note 1.— For flight plans submitted during flight, the information provided in respect of this item will be an indication of the location from which supplementary information concerning the flight may be obtained, if required.

Note 2.— For flight plans submitted during flight, the information to be provided in respect of this item will be the time over the first point of the route to which the flight plan relates.

Note 3.— The term “aerodrome” where used in the flight plan is intended to cover also sites other than aerodromes which may be used by certain types of aircraft, e.g. helicopters or balloons.

3.3.3 Completion of a flight plan

3.3.3.1 Whatever the purpose for which it is submitted, a flight plan shall contain information, as applicable, on relevant items up to and including “Alternate aerodrome(s)” regarding the whole route or the portion thereof for which the flight plan is submitted.

3.3.3.2 It shall, in addition, contain information, as applicable, on all other items when so prescribed by the appropriate ATS authority or when otherwise deemed necessary by the person submitting the flight plan.

3.3.4 Changes to a flight plan

Subject to the provisions of 3.6.2.2, all changes to a flight plan submitted for an IFR flight, or a VFR flight operated as a controlled flight, shall be reported as soon as practicable to the appropriate air traffic services unit. For other VFR

flights, significant changes to a flight plan shall be reported as soon as practicable to the appropriate air traffic services unit.

Note 1.— Information submitted prior to departure regarding fuel endurance or total number of persons carried on board, if incorrect at time of departure, constitutes a significant change to the flight plan and as such must be reported.

Note 2.— Procedures for submission of changes to repetitive flight plans are contained in the PANS-ATM, Part II (Doc 4444).

3.3.5 Closing a flight plan

3.3.5.1 Unless otherwise prescribed by the appropriate ATS authority, a report of arrival shall be made in person, by radiotelephony or via data link at the earliest possible moment after landing, to the appropriate air traffic services unit at the arrival aerodrome, by any flight for which a flight plan has been submitted

covering the entire flight or the remaining portion of a flight to the destination aerodrome.

3.3.5.2 When a flight plan has been submitted only in respect of a portion of a flight, other than the remaining portion of a flight to destination, it shall, when required, be closed by an appropriate report to the relevant air traffic services unit.

3.3.5.3 When no air traffic services unit exists at the arrival aerodrome, the arrival report, shall be made as soon as practicable after landing and by the quickest means available to the nearest air traffic services unit/ Flight Information Centre.

3.3.5.4 When communication facilities at the arrival aerodrome are known to be inadequate and alternate arrangements for the handling of arrival reports on the ground are not available, the following action shall be taken. Immediately prior to landing the aircraft shall, if practicable, transmit to the appropriate air traffic services unit, a message comparable to an arrival report, where such a report is required. Normally, this transmission shall be made to the aeronautical station serving the air traffic services unit in charge of the flight information region in which the aircraft is operated.

3.3.5.5 Arrival reports made by aircraft shall contain the following elements of information:

- a) aircraft identification;
- b) departure aerodrome;
- c) destination aerodrome (only in the case of a diversionary landing);
- d) arrival aerodrome;
- e) time of arrival.

Note.— Whenever an arrival report is required, failure to comply with these provisions may cause serious disruption in the air traffic services and incur great expense in carrying out unnecessary search and rescue operations.

3.4 Signals

3.4.1 Upon observing or receiving any of the signals given in Appendix 1, aircraft shall take such action as may be required by the interpretation of the signal given in that Appendix.

3.4.2 The signals of Appendix 1 shall, when used, have the meaning indicated therein. They shall be used only for the purpose indicated and no other signals likely to be confused with them shall be used.

3.4.3 A signalman shall be responsible for providing standard marshalling signals to aircraft in a clear and precise manner using the signals shown in Appendix 1.

3.4.4 No person shall guide an aircraft unless trained, qualified and approved by the DGCA to carry out the functions of a signalman.

3.4.5 The signalman shall wear a distinctive fluorescent identification vest to allow the flight crew to identify that he or she is the person responsible for the marshalling operation.

3.4.6 Daylight fluorescent-coloured wands, table-tennis bats or gloves shall be used for all signalling by all participating ground staff during daylight hours. Illuminated wands shall be used at night or in low visibility.

3.5 Time

3.5.1 Co-ordinated Universal Time (UTC) shall be used and shall be expressed in hours and minutes and, when required, seconds of the 24-hour day beginning at midnight.

3.5.2 A time check shall be obtained prior to operating a controlled flight and at such other times during the flight as may be necessary.

Note.— Such time check is normally obtained from an air traffic services unit unless other arrangements have been made by the operator or by the appropriate ATS authority.

3.5.3 Wherever time is utilized in the application of data link communications, it shall be accurate to within 1 second of UTC.

3.6 Air Traffic Control Service

3.6.1 Air traffic control clearances

3.6.1.1 An air traffic control clearance shall be obtained prior to operating a controlled flight, or a portion of a flight as a controlled flight. Such clearance shall be requested through the submission of a flight plan to an air traffic control unit.

Note 1.— Submission and acceptance of a flight plan does not authorize entry into the controlled airspace. Air Traffic Control clearance must be obtained from the appropriate Air Traffic Services unit before entry.

Note 2.— A flight plan may cover only part of a flight, as necessary, to describe that portion of the flight or those manoeuvres which are subject to air traffic control. A clearance may cover only part of a current flight plan, as indicated in a clearance limit or by reference to specific manoeuvres such as taxiing, landing or taking off.

Note 3.— If an air traffic control clearance is not satisfactory to a pilot-in-command of an aircraft, the pilot-in-command may request and, if practicable, will be issued an amended clearance.

3.6.1.2 Whenever an aircraft has requested a clearance involving priority, a report explaining the necessity for such priority shall be submitted, if requested by the appropriate air traffic control unit.

3.6.1.3 Potential reclearance in flight. If prior to departure it is anticipated that depending on fuel endurance and subject to reclearance in flight, a decision may be taken to proceed to a revised destination aerodrome, the appropriate air traffic control units shall be so notified by the insertion in the flight plan of information concerning the revised route (where known) and the revised destination.

Note.— The intent of this provision is to facilitate a reclearance to a revised destination, normally beyond the filed destination aerodrome.

3.6.1.4 An aircraft operated on a controlled aerodrome shall not taxi on the manoeuvring area without clearance from the aerodrome control tower and shall comply with any instructions given by that unit.

3.6.2 Adherence to current flight plan

3.6.2.1 Except as provided for in 3.6.2.4, an aircraft shall adhere to the current flight plan or the applicable portion of a current flight plan for a controlled flight within the tolerance defined in paragraphs 3.6.2.1.1 to 3.6.2.2 unless a request for a change has been made and clearance obtained from the appropriate air traffic control unit, or unless an emergency situation arises which necessitates immediate action by the aircraft, in which event as soon as circumstances permit, after such emergency authority is exercised, the appropriate air traffic services unit shall be notified of the action taken and that this action has been taken under emergency authority.

3.6.2.1.1 Unless otherwise authorized by the appropriate ATS authority, or directed by the appropriate air traffic control unit, controlled flights shall, in so far as practicable:

- a) when on an established ATS route, operate along the defined centre line of that route; or
- b) when on any other route, operate directly between the navigation facilities and/or points defining that route.

3.6.2.1.2 Subject to the overriding requirement in 3.6.2.1.1, an aircraft operating along an ATS route segment defined by reference to very high frequency omnidirectional radio ranges shall change over for its primary navigation guidance from the facility behind the aircraft to that ahead of it at, or as close as operationally feasible to, the change-over point, where established.

3.6.2.1.3 Deviation from the requirements in 3.6.2.1.1 shall be notified to the appropriate air traffic services unit.

3.6.2.2 Deviation from current flight plan. In the event that a controlled flight deviates from its current flight plan, the following action shall be taken:

- a) Deviation from track: if the aircraft is off track, action shall be taken forthwith to adjust the heading of the aircraft to regain track as soon as practicable.

- b) Deviation from ATC assigned Mach number/indicated airspeed: the appropriate air traffic services unit shall be informed immediately.
- c) Deviation from Mach number/true airspeed: if the sustained Mach number/true airspeed at cruising level varies by plus or minus Mach 0.02 or more, or plus or minus 19 km/h (10 kt) true airspeed or more from the current flight plan, the appropriate air traffic services unit shall be so informed.
- d) Change in time estimate: except where ADS-C is activated and serviceable in airspace where ADS-C services are provided, if the time estimate for the next applicable reporting point, flight information region boundary or destination aerodrome, whichever comes first, changes in error in excess of 2 minutes from that previously notified to air traffic services, such other period of time as is prescribed by the appropriate ATS authority or on the basis of air navigation agreements, flight crew shall notify the appropriate air traffic services unit as soon as possible.

3.6.2.2.1 When ADS-C services are provided and ADS-C is activated, the air traffic services unit shall be informed automatically via data link whenever changes occur beyond the threshold values stipulated by the ADS event contract.

3.6.2.3 Change Requests. Requests for current flight plan changes shall include information as indicated hereunder:

- a) *Change of cruising level:* aircraft identification; requested new cruising level and cruising Mach number/true airspeed at this level; revised time estimates (when applicable) at subsequent reporting points or flight information region boundaries.
- b) *Change of Mach number/true airspeed:* aircraft identification; requested Mach number/true airspeed.
- c) *Change of route:*
 - 1) *Destination unchanged:* aircraft identification; flight rules; description of new route of flight including related flight plan data beginning with the position from which requested change of route is to commence; revised time estimates; any other pertinent information.
 - 2) *Destination changed:* aircraft identification; flight rules; description of revised route of flight to revised destination aerodrome including related flight plan data, beginning with the position from which requested change of route is to commence; revised time estimates; alternate aerodrome(s); any other pertinent information.

3.6.2.4 *Weather deterioration below the VMC.* When it becomes evident that flight in VMC in accordance with its current flight plan will not be practicable, a VFR flight operated as a controlled flight shall:

- a) request an amended clearance enabling the aircraft to continue in VMC to destination or to an alternative aerodrome, or to leave the airspace within which an ATC clearance is required; or
- b) if no clearance in accordance with a) can be obtained, continue to operate in VMC and notify the appropriate ATC unit of the action being taken either to leave the airspace concerned or to land at the nearest suitable aerodrome; or

- c) if operated within a control zone, request authorization to operate as a special VFR flight; or
- d) request clearance to operate in accordance with the instrument flight rules.

3.6.3 Position reports

3.6.3.1 Unless exempted by the appropriate ATS authority or by the appropriate air traffic services unit under conditions specified by that authority, a controlled flight shall report to the appropriate air traffic services unit, as soon as possible, the time and level of passing each designated compulsory reporting point, together with any other required information. Position reports shall similarly be made in relation to additional points when requested by the appropriate air traffic services unit. In the absence of designated reporting points, position reports shall be made at intervals prescribed by the appropriate ATS authority or specified by the appropriate air traffic services unit.

3.6.3.1.1 Controlled flights providing position information to the appropriate air traffic services unit via data link communications shall only provide voice position reports when requested.

Note.— The conditions and circumstances in which ADS-B or SSR Mode C transmission of pressure-altitude satisfies the requirement for level information in position reports are indicated in the PANS-ATM, Part II (Doc 4444).

3.6.4 Termination of control

A controlled flight shall, except when landing at a controlled aerodrome, advise the appropriate ATC unit as soon as it ceases to be subject to air traffic control service.

3.6.5 Communications

3.6.5.1 An aircraft operated as a controlled flight shall maintain continuous air-ground voice communication watch on the appropriate communication channel and establish two-way communication as necessary with, the appropriate air traffic control unit, except as may be prescribed by the appropriate ATS authority in respect of aircraft forming part of aerodrome traffic at a controlled aerodrome.

Note 1.— SELCAL or similar automatic signalling devices satisfy the requirement to maintain an air-ground voice communication watch.

Note 2.— The requirement for an aircraft to maintain air-ground voice communication watch remains in effect after CPDLC has been established.

3.6.5.2 Communication failure. If a communication failure precludes compliance with 3.6.5.1, the aircraft shall comply with the communication failure procedures of CAR 10, Volume II, and with such of the following procedures as are appropriate. The aircraft shall attempt to establish communications with the appropriate air traffic control unit using all other available means. In addition, the aircraft, when forming part of the aerodrome traffic at a controlled aerodrome, shall keep a watch for such instructions as may be issued by visual signals.

3.6.5.2.1 If in visual meteorological conditions, the aircraft shall:

- a) continue to fly in visual meteorological conditions; land at the nearest suitable aerodrome; and report its arrival by the most expeditious means to the appropriate air traffic control unit ;
- b) if considered advisable, complete an IFR flight in accordance with 3.6.5.2.2.

3.6.5.2.2 If in instrument meteorological conditions or when the pilot of an IFR flight considers it inadvisable to complete the flight in accordance with 3.6.5.2.1 a), the aircraft shall:

- a) unless otherwise prescribed on the basis of regional air navigation agreement, in airspace where radar is not used in the provision of air traffic control, maintain the last assigned speed and level, or minimum flight altitude if higher, for a period of 20 minutes following the aircraft's failure to report its position over a compulsory reporting point and thereafter adjust level and speed in accordance with the filed flight plan;
- b) in airspace where radar is used in the provision of air traffic control, maintain the last assigned speed and level, or minimum flight altitude if higher, for a period of 7 minutes following:

- 1) the time the last assigned level or minimum flight altitude is reached; or
 - 2) the time the transponder is set to Code 7600; or
 - 3) the aircraft's failure to report its position over a compulsory reporting point; whichever is later, and thereafter adjust level and speed in accordance with the filed flight plan.
- c) when being radar vectored or having been directed by ATC to proceed offset using RNAV without a specified limit, rejoin the current flight plan route no later than the next significant point, taking into consideration the applicable minimum flight altitude;
 - d) proceed according to the current flight plan route to the appropriate designated navigation aid or fix serving the destination aerodrome and, when required to ensure compliance with c) below, hold over this aid or fix until commencement of descent;
 - e) commence descent from the navigation aid or fix specified in b) at, or as close as possible to, the expected approach time last received and acknowledged; or, if no expected approach time has been received and acknowledged, at, or as close as possible to, the estimated time of arrival resulting from the current flight plan;
 - f) complete a normal instrument approach procedure as specified for the designated navigation aid or fix; and
 - g) land, if possible, within thirty minutes after the estimated time of arrival specified in c) or the last acknowledged expected approach time, whichever is later.

Note 1.— The provision of air traffic control service to other flights operating in the airspace concerned will be based on the premise that an aircraft experiencing communication failure will comply with the rules in 3.6.5.2.2.

Note 2.— See also 5.1.2.

3.7 Unlawful interference

3.7.1 An aircraft which is being subjected to unlawful interference shall endeavour to notify the appropriate ATS unit of this fact, any significant circumstances associated therewith and any deviation from the current flight plan necessitated by the circumstances, in order to enable the ATS unit to give priority to the aircraft and to minimize conflict with other aircraft.

Note 1.— Responsibility of ATS units in situations of unlawful interference is contained in CAR 11.

Note 2.— Guidance material for use when unlawful interference occurs and the aircraft is unable to notify an ATS unit of this fact is contained in Attachment A to this CAR.

Note 3.— Action to be taken by SSR-, ADS-B-, and ADS-C-equipped aircraft which are being subjected to unlawful interference is contained in CAR 11, the PANS-ATM (Doc 4444) and the PANS-OPS (Doc 8168).

Note 4.— Action to be taken by CPDLC-equipped aircraft which are being subjected to unlawful interference is contained in Annex 11, the PANS-ATM (Doc 4444), and guidance material on the subject is contained in the Manual of Air Traffic Services Data Link Applications (Doc 9694).

Note 5.— AIP Nepal ENR 1.13 contains the General Rules and Procedures for Unlawful Interference.

Note 6.— Requirements for State authorities with respect to aircraft on the ground that are subject to unlawful interference are contained in Annex -17, Chapter 5, 5.2.4.

Note 7.— See 2.4 regarding the authority of the pilot-in-command of an aircraft.

3.7.2 If an aircraft is subject to unlawful interference, the pilot in command shall attempt to land as soon as practicable at the nearest suitable aerodrome or at a dedicated aerodrome assigned by the appropriate authority unless considerations aboard the aircraft dictate otherwise.

3.8 Interception

Note.— The word “interception” in this context does not include intercept and escort service provided, on request, to an aircraft in distress, in accordance with Volumes II and III of the International Aeronautical and Maritime Search and Rescue (IAMSAR) Manual (Doc 9731).

3.8.1. Nepal fully respects the provision of Non-use weapon against Civil Aircraft as per Article 3 bis (a) of Chicago Convention.

3.8.2 ATC Instructions to be followed by the aircraft in case the aircraft is intercepted.

3.8.3 The Nepalese registered aircraft or aircraft on lease being operated by the Nepalese person or the airlines, while operating in the airspace of foreign country, shall comply with the interception order issued by the authorized entity of such foreign country.

3.8.4 The pilot-in-command of a civil aircraft, when intercepted, shall comply with the Standards in Appendix 2, Sections 2 and 3, interpreting and responding to visual signals as specified in Appendix 1, Section 2.

Note.— See also 2.1.1 and 3.4.

3.9 VMC visibility and distance from cloud minima

VMC visibility and distance from cloud minima are contained in Table 3-1.

Table 3-9 (see 4.1)

Altitude band	Airspace class	Flight	Distance from cloud
At and above 3050 m	A*** B C D E F G	8Km	1 500 m horizontally 300 m (1 000 ft) vertically
Below 3050 m (10000 ft) AMSL and above 900 m (3000 ft) AMSL, or above 300 m (1000 ft) above terrain, whichever is the higher	A*** B C D E F G	5Km	1 500 m horizontally 300 m (1 000 ft) vertically
At and below 900 m (3000 ft) AMSL, or 300 m (1 000 ft) above terrain, whichever is the higher	A*** B C D E	5Km	1 500 m horizontally 300 m (1 000 ft) vertically
	F G	5Km**	Clear of cloud and with the surface in sight

* 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.

** When so prescribed by the appropriate ATS authority:

- a) flight visibilities reduced to not less than 1 500 m may be permitted for flights operating:
 - 1) at speeds that, in the prevailing visibility, will give adequate opportunity to observe other traffic or any obstacles in time to avoid collision; or
 - 2) in circumstances in which the probability of encounters with other traffic would normally be low, e.g. in areas of low volume traffic and for aerial work at low levels.
- b) HELICOPTERS may be permitted to operate *in less than 1 500 m* flight visibility, if manoeuvred at a speed that will give adequate opportunity to observe other traffic or any obstacles in time to avoid collision.

*** The VMC minima in Class A airspace are included for guidance to pilots and do not imply acceptance of VFR flights in Class A airspace.

4. VISUAL FLIGHT RULES

4.1 Except when operating as a special VFR flight, VFR flights shall be conducted so that the aircraft is flown in conditions of visibility and distance from clouds equal to or greater than those specified in Table 3-1.

4.2 Except when a clearance is obtained from an air traffic control unit, VFR flights shall not take off or land at an aerodrome within a control zone, or enter the aerodrome traffic zone or traffic pattern:

- a) when the ceiling is less than 450 m (1 500 ft); or
- b) when the ground visibility is less than 5 km.

4.3 VFR flights between sunset and sunrise shall be operated strictly within Civil Twilight Period and under the conditions as prescribed below:

- a) Prior authorization has been taken for the operation between sunset and sunrise from the concerned ATS unit.
- b) Such authorization for extension of VFR operations after sunset or before sunrise does not exceed 10 minutes in the hilly areas and 20 minutes in terai.¹
- c) Visual Meteorological Conditions including no significant weather prevail during such extended VFR operation.

4.4 Unless authorized by the DGCA, VFR flights shall not be operated:

- a) above FL200.
- b) at transonic and supersonic speeds.

4.5 Authorization for VFR flights to operate above FL 290 shall not be granted in areas where a vertical separation minimum of 300 m (1 000 ft) is applied above FL 290.

4.6 Except when necessary for take-off or landing, or except by permission from the DGCA, a VFR flight shall not be flown:

- a) over the congested areas of cities, towns or settlements or over an open air assembly of persons at a height less than 300 m (1000 ft) above the highest obstacle within a radius of 600 m from the aircraft;
- b) elsewhere than as specified in 4.6 a), at a height less than 150 m (500 ft) above the ground or water.

Note.— See also 3.1.2.

¹ VFR extension time, maximum of 20 minutes is based on difference of angles of sun's disc from the horizon between Sunset/Sunrise and Civil Twilight which is 5°.

Terai areas airports are Mahendranagar, Dhangadhi, Tikapur, Nepalgunj, Bhairahawa, Meghauli, Bharatpur, Simara, Janakpur, Rajbiraj, Biratnagar and Chandragadhi airports. Rest airports are inhilly area.

4.7 Except where otherwise indicated in air traffic control clearances or specified by the appropriate ATS authority, VFR flights in level cruising flight when operated above 900 m (3000 ft) from the ground or water, or a higher datum as specified by the appropriate ATS authority, shall be conducted at a cruising level appropriate to the track as specified in the Tables of cruising levels contained in Appendix 2.

4.8 VFR flights shall comply with the provisions of 3.6:

- a) when operated within Class C airspace;
- b) when forming part of aerodrome traffic at controlled aerodromes; or
- c) when operated as special VFR flights.

4.9 A VFR flight operating within or into areas, or along routes, designated by the appropriate ATS authority in accordance with 3.3.1.2 c) or d) shall maintain continuous air-ground voice communication watch on the appropriate communication channel of, and report its position as necessary to, the air traffic services unit providing flight information service.

Note.— See Notes following 3.6.5.1.

4.10 An aircraft operated in accordance with the visual flight rules which wishes to change to compliance with the instrument flight rules shall:

- a) if a flight plan was submitted, communicate the necessary changes to be effected to its current flight plan, or
- b) when so required by 3.3.1.2, submit a flight plan to the appropriate air traffic services unit and obtain a clearance prior to proceeding IFR when in controlled airspace.

5. INSTRUMENT FLIGHT RULES

5.1 Rules applicable to all IFR flights

5.1.1 Aircraft equipment

Aircraft shall be equipped with suitable instruments and with navigation equipment appropriate to the route to be flown.

5.1.2 Minimum levels

Except when necessary for take-off or landing, or except when specifically authorized by the Director General, an IFR flight shall be flown at a level which is not below the minimum flight altitude established by the State whose territory is overflown, or, where no such minimum flight altitude has been established:

- a) over high terrain or in mountainous areas, at a level which is at least 600 m (2000 ft) above the highest obstacle located within 8 km of the estimated position of the aircraft;
- b) elsewhere than as specified in a), at a level which is at least 300m (1000 ft) above the highest obstacle located within 8 km of the estimated position of the aircraft.

Note 1.— The estimated position of the aircraft will take account of the navigational accuracy which can be achieved on the relevant route segment, having regard to the navigational facilities available on the ground and in the aircraft.

Note 2.— See also 3.1.2.

5.1.3 Change from IFR flight to VFR flight

5.1.3.1 An aircraft electing to change the conduct of its flight from compliance with the instrument flight rules to compliance with the visual flight rules shall, if a flight plan was submitted, notify the appropriate air traffic services unit specifically that the IFR flight is cancelled and communicate thereto the changes to be made to its current flight plan.

5.1.3.2 When an aircraft operating under the instrument flight rules is flown in or encounters visual meteorological conditions it shall not cancel its IFR flight unless it is anticipated, and intended, that the flight will be continued for a reasonable period of time in uninterrupted visual meteorological conditions.

5.2 Rules applicable to IFR flights within controlled airspace

5.2.1 IFR flights shall comply with the provisions of 3.6 when operated in controlled airspace.

5.2.2 An IFR flight operating in cruising flight in controlled airspace shall be flown at a cruising level, or, if authorized to employ cruise climb techniques, between two levels or above a level, selected from the tables of cruising levels in Appendix 2, except that the correlation of levels to track prescribed therein shall not apply whenever otherwise indicated in air traffic control clearances or specified by the appropriate ATS authority in Aeronautical Information Publications.

5.3 Rules applicable to IFR flights outside controlled airspace

5.3.1 Cruising levels

An IFR flight operating in level cruising flight outside of controlled airspace shall be flown at a cruising level appropriate to its track as specified in the tables of cruising levels in Appendix 2, except when otherwise specified by the appropriate ATS authority for flight at or below 900 m (3 000 ft) above mean sea level

Note.— This provision does not preclude the use of cruise climb techniques by aircraft in supersonic flight.

5.3.2 Communications

An IFR flight operating outside controlled airspace but within or into areas, or along routes, designated by the appropriate ATS authority in accordance with 3.3.1.2 c) or d) shall maintain an air-ground voice communication watch on the appropriate communication channel and establish two-way communication, as necessary, with the air traffic services unit providing flight information service.

Note.— See Notes following 3.6.5.1.

5.3.3 Position reports

An IFR flight operating outside controlled airspace and required by the appropriate ATS authority to:

- submit a flight plan,
- maintain an air-ground voice communication watch on the appropriate communication channel and establish two-way communication, as necessary, with the air traffic services unit providing flight information service, shall report position as specified in 3.6.3 for controlled flights.

Note.— Aircraft electing to use the air traffic advisory service whilst operating IFR within specified advisory airspace are expected to comply with the provisions of 3.6, except that the flight plan and changes thereto are not subjected to clearances and that two-way communication will be maintained with the unit providing the air traffic advisory service.

APPENDIX 1**SIGNALS****1. DISTRESS AND URGENCY SIGNALS**

Note 1.— None of the provisions in this section shall prevent the use, by an aircraft in distress, of any means at its disposal to attract attention, make known its position and obtain help.

Note 2.— For full details of telecommunication transmission procedures for the distress and urgency signals, see Annex 10, Volume II, Chapters.

Note 3.— For details of the search and rescue visual signals, see Annex 12.

1.1 Distress signals

The following signals, used either together or separately, mean that grave and imminent danger threatens, and immediate assistance is requested:

- a) a signal made by radiotelegraphy or by any other signalling method consisting of the group SOS (...---... in the Morse Code);
- b) a radiotelephony distress signal consisting of the spoken word MAYDAY;
- c) a distress message sent via data link which transmits the intent of the word MAYDAY;
- d) rockets or shells throwing red lights, fired one at a time at short intervals;
- e) a parachute flare showing a red light.

Note.— Article 41 of the ITU Radio Regulations (Nos. 3268, 3270 and 3271 refer) provides information on the alarm signals for actuating radiotelegraph and radiotelephone auto-alarm systems:

3268 The radiotelegraph alarm signal consists of a series of twelve dashes sent in one minute, the duration of each dash being four seconds and the duration of the interval between consecutive dashes one second. It may be transmitted by hand but its transmission by means of an automatic instrument is recommended.

3270 The radiotelephone alarm signal consists of two substantially sinusoidal audio frequency tones transmitted alternately. One tone shall have a frequency of 2 200 Hz and the other a frequency of 1300 Hz, the duration of each tone being 250 milliseconds.

3271 The radiotelephone alarm signal, when generated by automatic means, shall be sent continuously for a period of at least thirty seconds but not exceeding one minute; when generated by other means, the signal shall be sent as continuously as practicable over a period of approximately one minute.

1.2 Urgency signals

1.2.1 The following signals, used either together or separately, mean that an aircraft wishes to give notice of difficulties which compel it to land without requiring immediate assistance:

a) the repeated switching on and off of the landing lights;

or

b) the repeated switching on and off of the navigation lights in such manner as to be distinct from flashing navigation lights.

1.2.2 The following signals, used either together or separately, mean that an aircraft has a very urgent message to transmit concerning the safety of a ship, aircraft or other vehicle, or of some person on board or within sight:

a) a signal made by radiotelegraphy or by any other signalling method consisting of the group XXX;

b) a radiotelephony urgency signal consisting of the spoken words PAN, PAN;

c) an urgency message sent via data link which transmits the intent of the words PAN, PAN.

2. SIGNALS FOR USE IN THE EVENT OF INTERCEPTION

2.1 Signals initiated by intercepting aircraft and responses by intercepted aircraft

<i>Series</i>	<i>INTERCEPTING Aircraft Signals</i>	<i>Meaning</i>	<i>INTERCEPTED Aircraft Responds</i>	<i>Meaning</i>
1	<p>DAY or NIGHT — Rocking aircraft and flashing navigational lights at irregular intervals (and landing lights in the case of a helicopter) from a position slightly above and ahead of, and normally to the left of, the intercepted aircraft (or to the right if the intercepted aircraft is a helicopter) and, after acknowledgement, a slow level turn, normally to the left (or to the right in the case of a helicopter) on the desired heading.</p> <p><i>Note 1.— Meteorological conditions or terrain may require the intercepting aircraft to reverse the positions and direction of turn given above in Series 1.</i></p> <p><i>Note 2.— If the intercepted aircraft is notable to keep pace with the intercepting aircraft, the latter is expected to fly a series of race-track patterns and to rock the aircraft each time it passes the intercepted aircraft.</i></p>	<p>You have been intercepted. Follow me.</p>	<p>DAY or NIGHT — Rocking aircraft, flashing navigational lights at irregular intervals and will follow.</p> <p><i>Note.— Additional action required to be taken by intercepted aircraft is prescribed in Chapter 3, 3.8.</i></p>	<p>Understood, will comply.</p>
2	<p>DAY or NIGHT — An abrupt breakaway manoeuvre from the intercepted aircraft consisting of a climbing turn of 90 degrees or more without crossing the line of flight of the intercepted aircraft.</p>	<p>You may proceed.</p>	<p>DAY or NIGHT — Rocking the aircraft.</p>	<p>Understood, will comply.</p>
3 (if	<p>DAY or NIGHT — Lowering landing gear (if fitted), showing steady landing lights and overflying runway in use or, if the intercepted aircraft is a helicopter, overflying the helicopter landing area. In the case of helicopters, the intercepting helicopter makes a landing approach, coming to hover near to the landing area.</p>	<p>Land at this aerodrome.</p>	<p>DAY or NIGHT — Lowering landing gear, (if fitted), showing steady landing lights and following the intercepting aircraft and, if, after overflying the runway in use or helicopter landing area, landing is considered safe, proceeding to land.</p>	<p>Understood, will comply.</p>

2.2 Signals initiated by intercepted aircraft and responses by intercepting aircraft

<i>Series</i>	<i>INTERCEPTED Aircraft Signals</i>	<i>Meaning</i>	<i>INTERCEPTING Aircraft Responds</i>	<i>Meaning</i>
4	DAY or NIGHT — Raising landing gear (if fitted) and flashing landing lights while passing over runway in use or helicopter landing area at a height exceeding 300 m (1 000 ft) but not exceeding 600 m (2 000 ft) (in the case of a helicopter, at a height exceeding 50 m (170 ft) but not exceeding 100 m (330 ft)) above the aerodrome level, and continuing to circle runway in use or helicopter landing area. If unable to flash landing lights, flash any other lights available.	Aerodrome you have designated is inadequate.	DAY or NIGHT — If it is desired that the intercepted aircraft follow the intercepting aircraft to an alternate aerodrome, the intercepting aircraft raises its landing gear (if fitted) and uses the Series 1 signals prescribed for intercepting aircraft.	Understood, follow me.
	5 DAY or NIGHT — Regular switching on and off of all available lights but in such a manner as to be distinct from flashing lights.	Cannot comply.	If it is decided to release the intercepted aircraft, the intercepting aircraft uses the Series 2 signals prescribed for intercepting aircraft.	Understood, you may proceed.
		In distress.	DAY or NIGHT — Use Series 2 signals prescribed for intercepting aircraft.	Understood.
6	DAY or NIGHT — Irregular flashing of all available lights.		DAY or NIGHT — Use Series 2 signals prescribed for intercepting aircraft.	Understood.

3. VISUAL SIGNALS USED TO WARN AN OR ABOUT TO ENTER A RESTRICTED, PROHIBITED OR DANGER AREA

By day and by night, a series of projectiles discharged from the ground at intervals of 10 seconds, each showing, on bursting, red and green lights or stars will indicate to an unauthorized aircraft that it is flying in or about to enter a restricted, prohibited or danger area, and that the aircraft is to take such remedial action as may be necessary

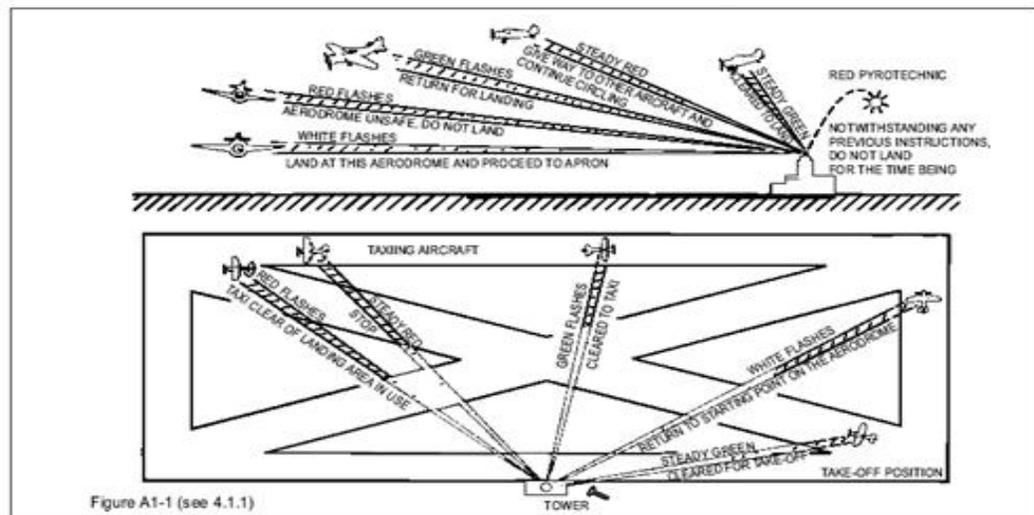
4. SIGNALS FOR AERODROME TRAFFIC

4.1 Light and pyrotechnic signals

4.1.1 Instructions

Light	From Aerodrome Control to:	
	Aircraft in flight	Aircraft on the ground
Directed towards aircraft concerned (see Figure A1-1)	Steady green	Cleared to land
	Steady red	Give way to other aircraft and continue circling
	Series of green flashes	Return for landing*
	Series of red flashes	Aerodrome unsafe, do not land
	Series of white flashes	Land at this aerodrome and proceed to apron*
Red pyrotechnic	Notwithstanding any previous instructions, do not land for the time being	

* Clearances to land and to taxi will be given in due course.



4.1.2 Acknowledgement by an aircraft

a) When in flight:

- 1) during the hours of daylight:
 - by rocking the aircraft's wings;

Note.— This signal should not be expected on the base and final legs of the approach.

- 2) during the hours of darkness:
 - by flashing on and off twice the aircraft's landing lights or, if not so equipped, by switching on and off twice its navigation lights.
- b) When on the ground:
 - 1) during the hours of daylight:
 - by moving the aircraft's ailerons or rudder;
 - 2) during the hours of darkness:
 - by flashing on and off twice the aircraft's landing lights or, if not so equipped, by switching on and off twice its navigation lights.

4.2 Visual ground signals

Note.— For details of visual ground aids, see Annex 14

4.2.1 Prohibition of landing

A horizontal red square panel with yellow diagonals (Figure 1.2) when displayed in a signal area indicates that landings are prohibited and that the prohibition is liable to be prolonged.



Fig 1.2

4.2.2 Need for special precautions while approaching or landing

A horizontal red square panel with one yellow diagonal (Figure 1.3) when displayed in a signal area indicates that owing to the bad state of the manoeuvring area, or for any other reason, special precautions must be observed in approaching to land or in landing.

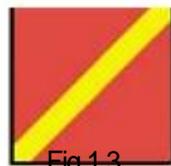


Fig 1.3

4.2.3 Use of runways and taxiways

4.2.3.1 A horizontal white dumb-bell (Figure 1.4) when displayed in a signal area indicates that aircraft are required to land, take off and taxi on runways and taxiways only.



Fig 1.4

- 4.2.3.2 The same horizontal white dumb-bell as in 4.2.3.1 but with a black bar placed perpendicular to the shaft across each circular portion of the dumb-bell (Figure 1.5) when displayed in a signal area indicates that aircraft are required to land and take off on runways only, but other manoeuvres need not be confined to runways and taxiways.



Fig 1.5

4.2.4 Closed runways or taxiways

Crosses of a single contrasting colour, yellow or white (Figure 1.6), displayed horizontally on runways and taxiways or parts thereof indicate an area unfit for movement of aircraft.



On portion of runway



Fig 1.6

4.2.5 Directions for landing or take-off

4.2.5.1 A horizontal white or orange landing T (Figure 1.7) indicates the direction to be used by aircraft for landing and take-off, which shall be in a direction parallel to the shaft of the T towards the cross arm.

Note.— When used at night, the landing T is either illuminated or outlined in white coloured lights.



Fig 1.7

4.2.5.2 A set of two digits (Figure 1.8) displayed vertically at or near the aerodrome control tower indicates to aircraft on the manoeuvring area the direction for take-off, expressed in units of 10 degrees to the nearest 10 degrees of the magnetic compass.

09

Figure 1.8

4.2.6 Right-hand traffic

When displayed in a signal area, or horizontally at the end of the runway or strip in use, a right-hand arrow of conspicuous colour (Figure 1.9) indicates that turns are to be made to the right before landing and after take-off.

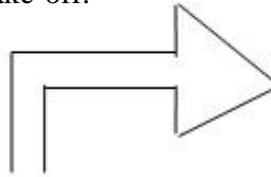


Figure 1.9

4.2.7 Air traffic services reporting office

The letter C displayed vertically in black against a yellow background (Figure 1.10) indicates the location of the air traffic services reporting office.

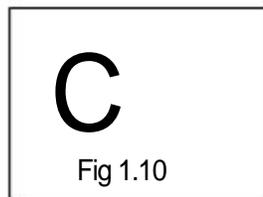


Fig 1.10

4.2.8 Glider flights in operation

A double white cross displayed horizontally (Figure 1.11) in the signal area indicates that the aerodrome is being used by gliders and that glider flights are being performed.



Fig 1.11

5. MARSHALLING SIGNALS

5.1 From a signalman to an aircraft

Note 1.— These signals are designed for use by the signalman, with hands illuminated as necessary to facilitate observation by the pilot, and facing the aircraft in a position:

- a) for fixed-wing aircraft, on the left side of aircraft, where best seen by the pilot;
and
- b) for helicopters, where the signalman can best be seen by the pilot.

Note 2.— The meaning of the relevant signals remains the same if bats, illuminated wands or torchlights are held.

Note 3.— The aircraft engines are numbered, for the signalman facing the aircraft, from right to left (i.e. No. 1 engine being the port outer engine).

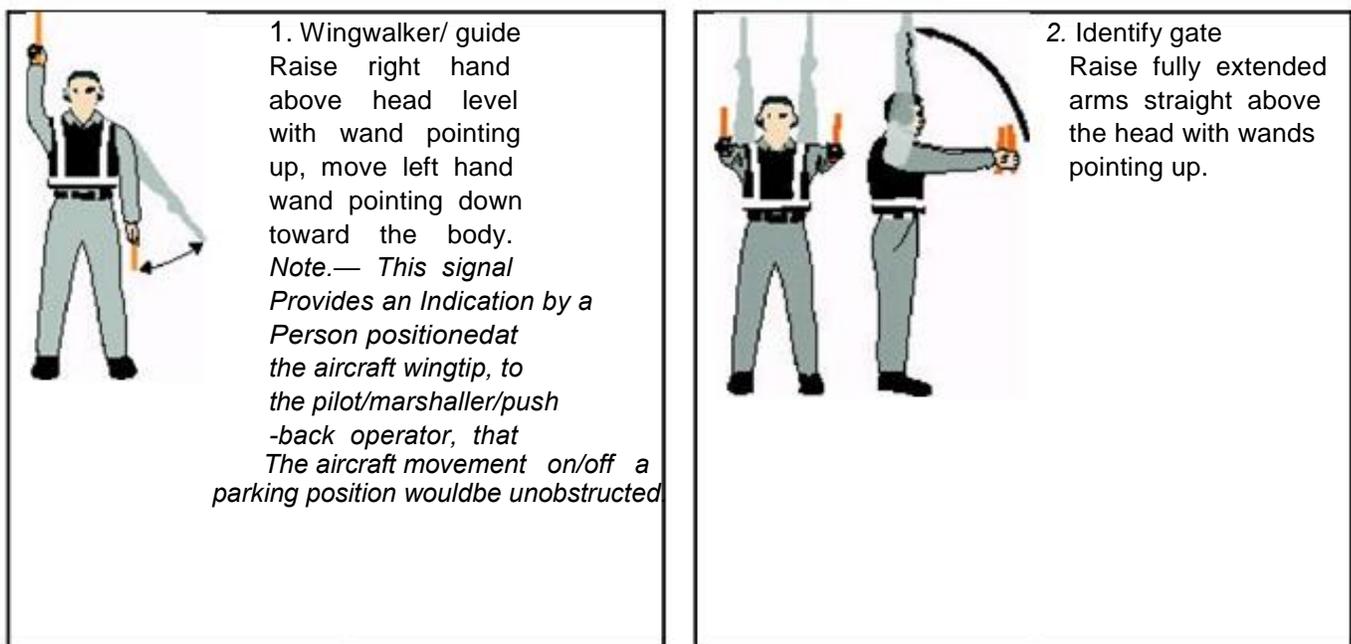
Note 4.— Signals marked with an asterisk () are designed for use to hovering helicopters.*

Note 5.— References to wands may be also read to refer to daylight fluorescentcoloured table-tennis bats or gloves (daytime only).

Note 6. — References to the signalman may also be read to refer to marshaller.

- 5.1.1 Prior to using the following signals, the signalman shall ascertain that the area within which an aircraft is to be guided is clear of objects which the aircraft, in complying with 3.4.1, might otherwise strike.

Note.— The design of many aircraft is such that the path of the wing tips, engines and other extremities cannot always be monitored visually from the flight deck while the aircraft is being manoeuvred on the ground.






3. Proceed to next signalman or as directed by tower/ground control Point both arms upward, move and extend arms outward to side of body and point with wands to direction of next signalman or taxi area.



4. Straight ahead Bend extended arms at elbows and move wands up and down from chest height to head.



5 a). Turn left (from the pilots point of view) With right arm and wand extended at a 90° angle to the body, left hand makes the come ahead signal. The rate of signal motion indicates to the pilot the rate of aircraft turn.



5 b). Turn right (from the pilots point of view) With left arm and wand extended at a 90° angle to the body, right hand makes the come ahead signal. The rate of signal motion indicates to the pilot the rate of aircraft turn.



6 a) Normal stop Fully extend arms and wands at a 90° angle to the sides and slowly move to above the head until wands cross.



6 b). Emergency stop Abruptly extend arms and wands to top of head, crossing wands.

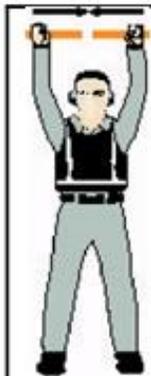


7 a). Set brakes
Raise hand just above shoulder height with open palm. Ensuring eye contact with the flight crew, close hand into a fist. Do not move until receipt of thumbs up acknowledgment from the flight crew.



7 b). Release brakes
Raise hand just above shoulder height with hand closed in a fist. Ensuring eye contact with the flight crew, open palm. Do not move until receipt of

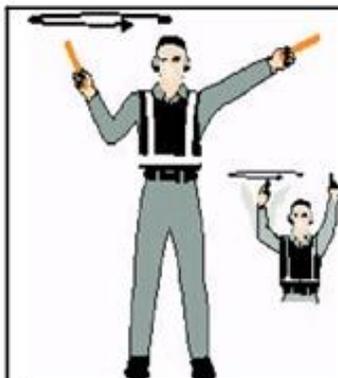
thumbs up acknowledgment from the flight crew.



8 a). Chocks inserted
With arms and wands fully extended above head, move wands inward in a "jabbing" motion until the wands touch. Ensure an acknowledgment is received from the flight crew.



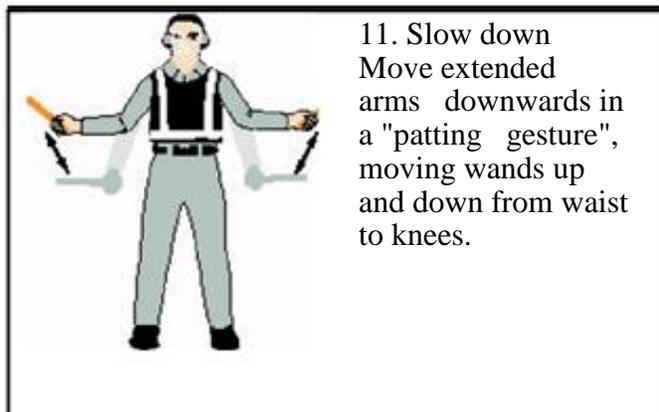
8 b). Chocks removed
With arms and wands fully extended above head, move wands outward in a "jabbing" motion. Do not remove chocks until authorised by the flight crew.



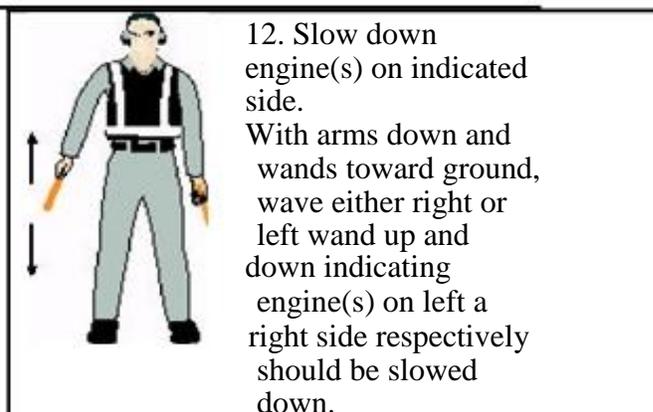
9. Start engine(s)
Raise right arm to head level with wand pointing up and start a circular motion with hand, at the same time with the left arm raised above head level point to engine to be started.



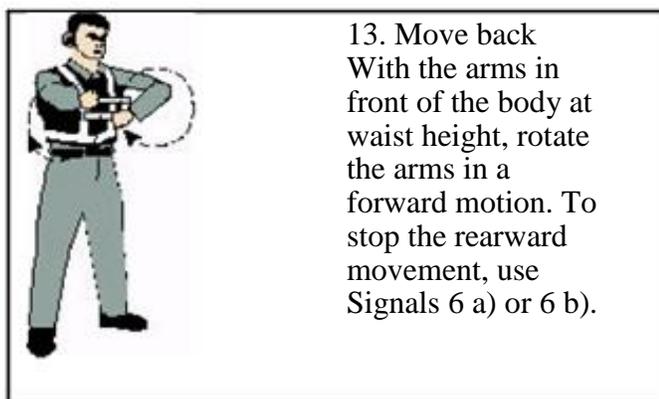
10. Cut engines
Extend arm with wand forward of body at shoulder level, move hand and wand to top of left shoulder and draw wand to top of right shoulder in a slicing motion across throat.



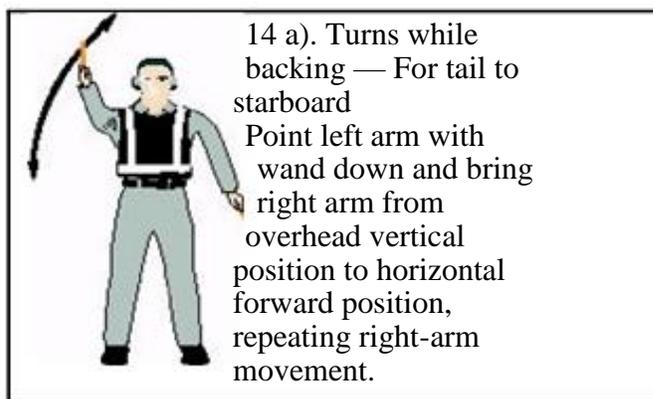
11. Slow down
Move extended arms downwards in a "patting gesture", moving wands up and down from waist to knees.



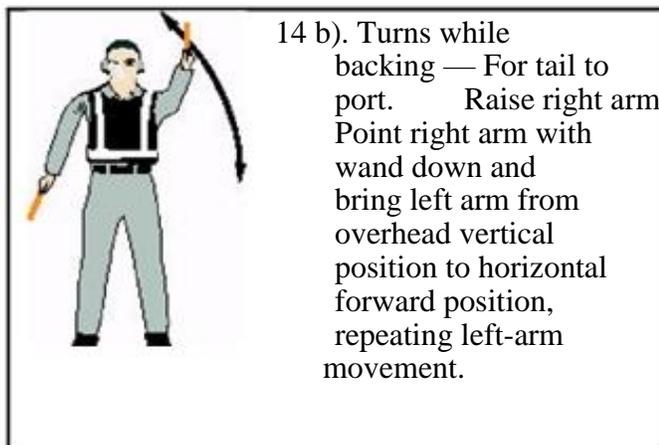
12. Slow down engine(s) on indicated side.
With arms down and wands toward ground, wave either right or left wand up and down indicating engine(s) on left a right side respectively should be slowed down.



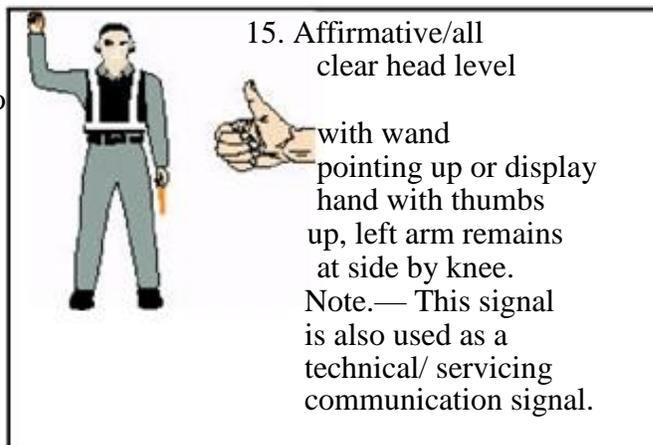
13. Move back
With the arms in front of the body at waist height, rotate the arms in a forward motion. To stop the rearward movement, use Signals 6 a) or 6 b).



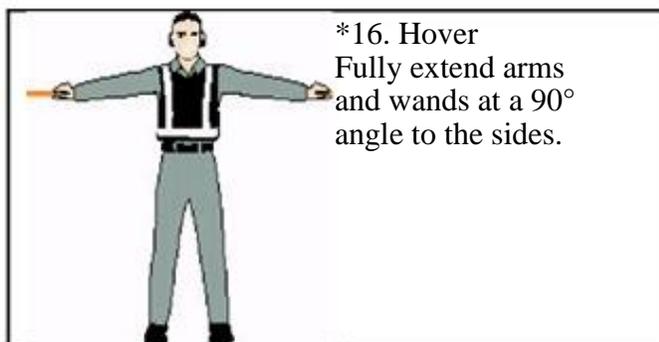
14 a). Turns while backing — For tail to starboard
Point left arm with wand down and bring right arm from overhead vertical position to horizontal forward position, repeating right-arm movement.



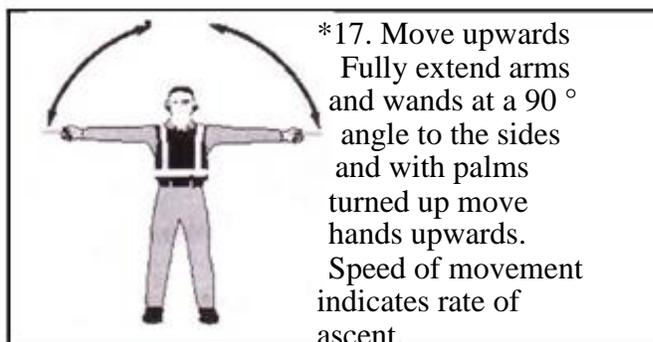
14 b). Turns while backing — For tail to port. Raise right arm to Point right arm with wand down and bring left arm from overhead vertical position to horizontal forward position, repeating left-arm movement.



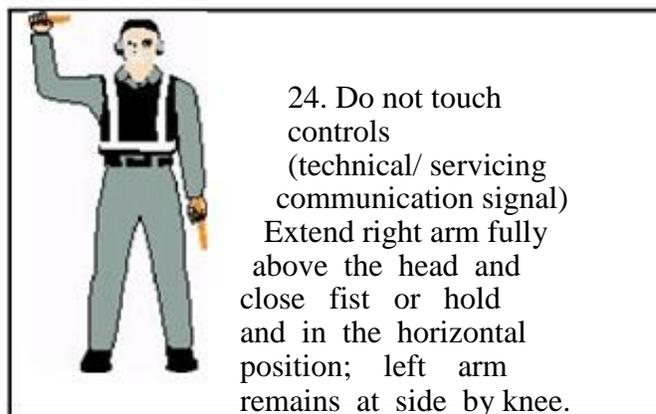
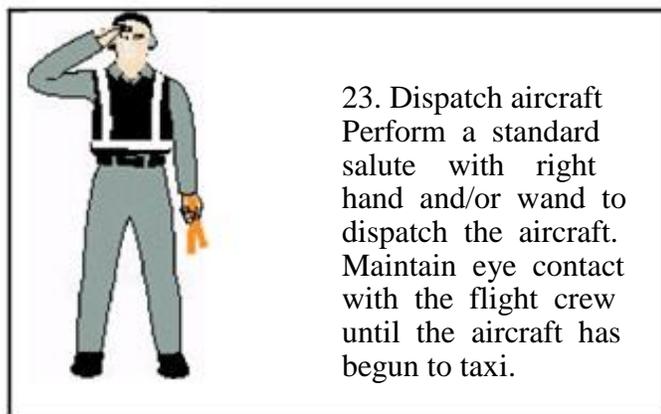
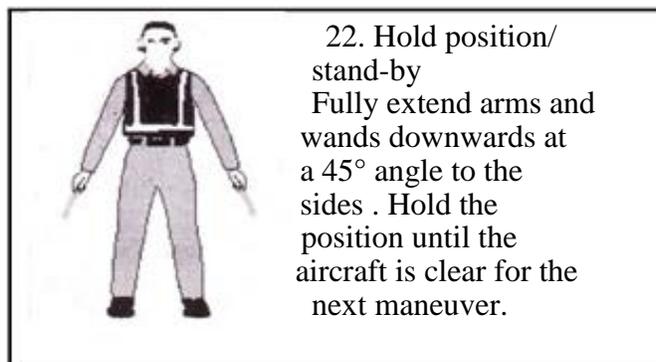
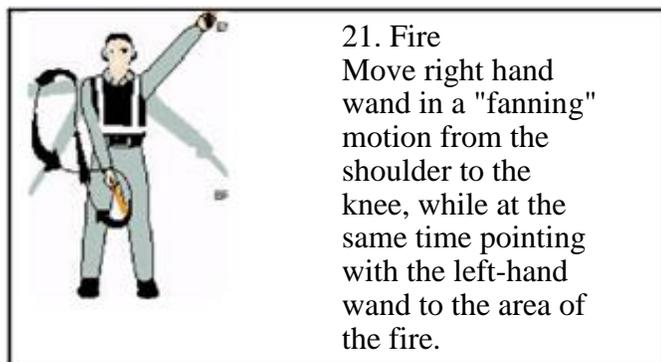
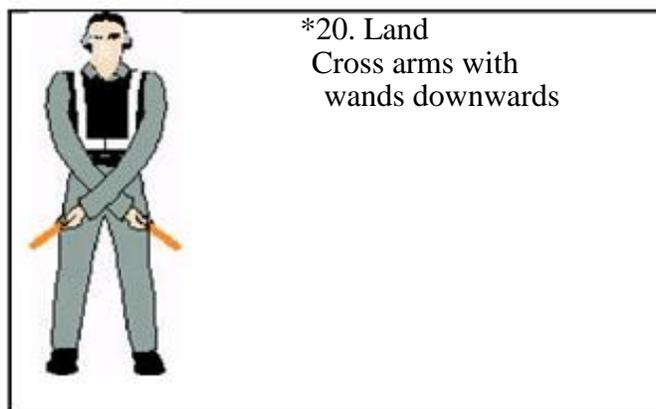
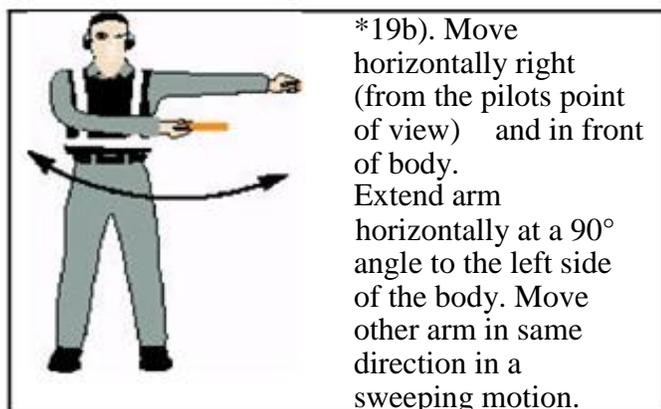
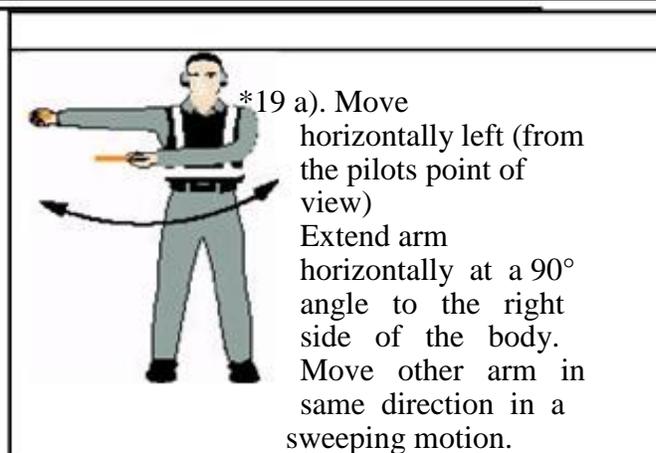
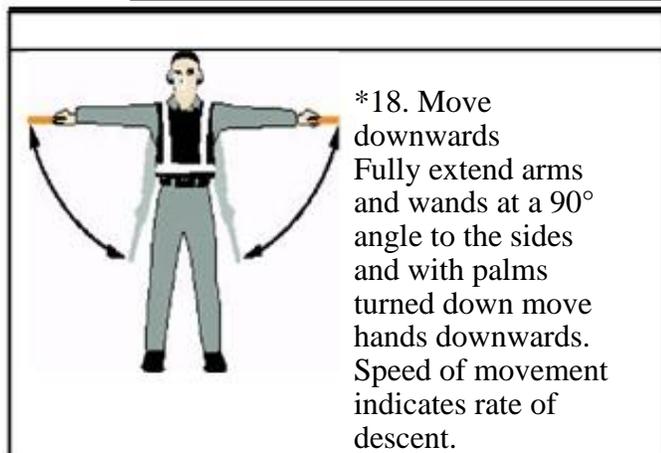
15. Affirmative/all clear head level
with wand pointing up or display hand with thumbs up, left arm remains at side by knee.
Note.— This signal is also used as a technical/ servicing communication signal.



*16. Hover
Fully extend arms and wands at a 90° angle to the sides.



*17. Move upwards
Fully extend arms and wands at a 90° angle to the sides and with palms turned up move hands upwards. Speed of movement indicates rate of ascent.





25. Connect ground power (technical/servicing communication signal) Hold arms fully extended above head, open left hand horizontally and move finger tips of right hand into and touch the open palm of left hand (forming a "T"). At night, illuminated wands can also be used to form the "T" above the head.



26. Disconnect power (technical/servicing Communication signal)
Hold arms fully extended above head with finger tips of right hand touching the open horizontal palm of the left hand (forming a "T"), then move right hand away from the left. Do not disconnect power until authorised by the flight crew. At night, illuminated wands can also be used to open the "T" above the head



27. Negative technical/servicing communication signal) Hold right arm straight out at 90° from shoulder and point wand down to ground or display hand with thumbs down, left hand remains at side by knee .



28. Establish Communication via interphone (technical/servicing communication signal) Extend both arms at 90° from body and move hands to cup both ears.



29. Open/close stairs (technical/servicing communication signal) With right arm at side and left arm raised above head at a 45° angle, move right arm in sweeping motion towards top of left shoulder. Note.— This signal is intended mainly for aircraft with the set of integral stairs at the front.

5.2 From the pilot of an aircraft to a signalman

Note 1.— These signals are designed for use by a pilot in the cockpit with hands plainly visible to the signalman, and illuminated as necessary to facilitate observation by the signalman.

Note 2.— The aircraft engines are numbered in relation to the signalman facing the aircraft, from right to left (i.e. No. 1 engine being the port outer engine).

5.2.1 Brakes

Note.— The moment the fist is clenched or the fingers are extended indicates, respectively, the moment of brake engagement or release.

- a) Brakes engaged: raise arm and hand, with fingers extended, horizontally in front of face, then clench fist.
- b) Brakes released: raise arm, with fist clenched, horizontally in front of face, then extend fingers.

5.2.3 Chocks

- a) Insert chocks: arms extended, palms outwards, move hands inwards to cross in front of face.
- b) Remove chocks: hands crossed in front of face, palms outwards, move arms outwards.

5.2.4 Ready to start engine(s)

Raise the appropriate number of fingers on one hand indicating the number of the engine to be started.

5.3 Technical/servicing communication signals

5.3.1 Manual signals shall only be used when verbal communication is not possible with respect to technical/servicing communication signals.

5.3.2 Signalmen shall ensure that an acknowledgement is received from flight crew with respect to technical/servicing communication signals.

Note.— The technical/servicing communication signals are included in Appendix 1 to standardize the use of hand signals used to communicate to flight crews during the aircraft movement process that relate to servicing or handling functions.

6. Standard emergency hand signals

The following hand signals are established as the minimum required for emergency communication between the aircraft rescue and firefighting (ARFF) incident commander/ARFF firefighters and the cockpit and/or cabin crews of the incident aircraft. ARFF emergency hand signals should be given from the left front side of the aircraft for the flight crew. *Note.— In order to communicate more effectively with the*

cabin crew, emergency hand signals may be given by ARFF firefighters from other positions.

1. Recommend evacuation



Evacuation recommended based on ARFF and incident commander's assessment of external situation.

Arm extended from body and held horizontal with hand upraised at eye level. Execute beckoning arm motion angled backward. Non-beckoning arm held against body.

Night — same with wands.

2. Recommended stop



Recommend evacuation in progress be halted. Stop aircraft movement or other activity in progress.

Arms in front of head, crossed at wrists.

Night — same with wands.

3. Emergency contained



No outside evidence of dangerous conditions or "all-clear."

Arms extended outward and down at a 45-degree angle. Arms moved inward below waistline simultaneously until wrists crossed, then extended outward to starting position (umpire's "safe" signal).

Night — same with wands.

4. Fire



Move right-hand in a "fanning" motion from shoulder to knee, while at the same time pointing with left hand to area of fire.

Night — same with wands.

APPENDIX 2. INTERCEPTION OF CIVIL AIRCRAFT

(Note.— See Chapter 3, 3.8 of the CAR)

1. Principles to be observed by States

1.1 To achieve the uniformity in regulations which is Necessary for the safety of navigation of civil aircraft due regard shall be had by Contracting States to the following principles when developing regulations and administrative directives:

- a) interception of civil aircraft will be undertaken only as a last resort;
- b) if undertaken, an interception will be limited to determining the identity of the aircraft, unless it is necessary to return the aircraft to its planned track, direct it beyond the boundaries of national airspace, guide it away from a prohibited, restricted or danger area or instruct it to effect a landing at a designated aerodrome;
- c) practice interception of civil aircraft will not be undertaken;
- d) navigational guidance and related information will be given to an intercepted aircraft by radio telephony, whenever radio contact can be established; and
- e) in the case where an intercepted civil aircraft is required to land in the territory overflowed, the aerodrome designated for the landing is to be suitable for the safe landing of the aircraft type concerned.

Note.—In the unanimous adoption by the 25th Session (Extraordinary) of the ICAO Assembly on 10 May 1984 of Article 3 bis to the Convention on International Civil Aviation, Contracting States have recognized that “every State must refrain from resorting to the use of weapons against civil aircraft in flight”.

1.2 Contracting States shall publish a standard method that has been established for the manoeuvring of aircraft intercepting a civil aircraft. Such method shall be designed to avoid any hazard for the intercepted aircraft.

Note.—Special recommendations regarding a method for the manoeuvring are contained in Attachment A, Section 3.

1.3 Contracting States shall ensure that provision is made for the use of secondary surveillance radar or ADS-B, where available, to identify civil aircraft in areas where they may be subject to interception.

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1.3 Contracting States shall ensure that provision is made for the use of secondary surveillance radar or ADS-B, where available, to identify civil aircraft in areas where they may be subject to interception.

2. Action by intercepted aircraft

2.1 An aircraft which is intercepted by another aircraft shall immediately:

- a) follow the instructions given by the intercepting aircraft, interpreting and responding to visual signals in accordance with the specifications in Appendix 1;
- b) notify, if possible, the appropriate air traffic services unit;
- c) attempt to establish radiocommunication with the intercepting aircraft or with the appropriate intercept control unit, by making a general call on the emergency frequency 121.5 MHz, giving the identity of the intercepted aircraft and the nature of the flight; and if no contact has been established and if practicable, repeating this call on the emergency frequency 243 MHz;
- d) if equipped with SSR transponder, select Mode A, Code 7700, unless otherwise instructed by the appropriate air traffic services unit.
- e) if equipped with ADS-B or ADS-C, select the appropriate emergency functionality, if available, unless otherwise instructed by the appropriate air traffic services unit.

2.2 If any instructions received by radio from any sources conflict with those given by the intercepting aircraft by visual signals, the intercepted aircraft shall request immediate clarification while continuing to comply with the visual instructions given by the intercepting aircraft.

2.3 If any instructions received by radio from any sources conflict with those given by the intercepting aircraft by radio, the intercepted aircraft shall request immediate clarification while continuing to comply with the radio instructions given by the intercepting aircraft.

3. Radio communication during interception

If radio contact is established during interception but communication in a common language is not possible, attempts shall be made to convey instructions, acknowledgement of instructions and essential information by using the phrases and pronunciations in Table A2-1 and transmitting each phrase twice:

Table A2-1

<i>Phrases for use by INTERCEPTING aircraft</i>			<i>Phrases for use by INTERCEPTED aircraft</i>		
<i>Phrase</i>	<i>Pronunciation¹</i>	<i>Meaning</i>	<i>Phrase</i>	<i>Pronunciation¹</i>	<i>Meaning</i>
CALL SIGN	<u>KOL SA-IN</u>	What is your call sign?	CALL SIGN	<u>KOL SA-IN</u>	My call sign is (call sign)
FOLLOW	<u>FOL-LO</u>	Follow me	(call sign)	(call sign)	
DESCEND	<u>DEE-SEND</u>	Descend for landing	WILCO	<u>VILL-KO</u>	Understood
YOU LAND	<u>YOU LAAND</u>	Land at this aerodrome	Will comply		
PROCEED	<u>PRO-SEED</u>	You may proceed	CAN NOT	<u>KANN</u>	Unable to comply
			NOTT		
			REPEAT	<u>REE-PEET</u>	Repeat your
			AM LOST	<u>AM LOSST</u>	instruction Position
			MAYDAY	<u>MAYDAY</u>	unknown
			HIJACK ³	<u>HI-JACK</u>	I am in distress
			LAND	<u>LAAND</u>	I have been hijacked
			(place name)	(place name)	I request to land
			DESCEND	<u>DEE-SEND</u>	at (place name)
					I require descent

- In the second column, syllables to be emphasized are underlined.*
- The call sign required to be given is that used in radiotelephony communications with air traffic services units and corresponding to the aircraft identification in the flight plan.*
- Circumstances may not always permit, nor make desirable, the use of the phrase "HIJACK".*

APPENDIX -3**TABLE OF CRUISING LEVELS**

- a) The pilot-in-command of an IFR or VFR flight at or above FL 150, shall select a level corresponding to the appropriate magnetic track as indicated in the following semi-circular cruising levels
- b) A vertical separation minimum of 1000 ft is applied between FL 290 and FL 410 inclusive.

Table 1 : : RVSM Semi - Circular cruising levels within Kathmandu FIR VNSM

From 000 degrees to 179 degrees				From 180 degrees to 359 degrees			
IFR	Flight	VFR	Flight	IFR	Flight	VFR	Flight
Flight Level	Altitude (Ft)	Flight Level	Altitude (Ft)	Flight Level	Altitude I (Ft)	Flight Level	Altitude (Ft)
150	15000	155	15500	160	16000	165	16500
170	17000	175	17500	180	18000	185	18500
190	19000	195	19500	200	20000		
210	21000			220	22000		
230	23000			240	24000		
250	25000			260	26000		
270	27000			280	28000		
290	29000			300	30000		
310	31000			320	32000		
330	33000			340	34000		
350	35000			360	36000		
370	37000			380	38000		
390	39000			400	40000		
410	41000			430	43000		
450	45000						

- b) The pilot-in-command of a VFR or IFR flight at or above 3000 ft, below altitude 13500 ft AMSL shall select a level corresponding to the appropriate magnetic track as indicated in the following quadrant cruising levels

Table 2: Quadrantal Cruising Levels

000° 089°	090° 179°	180° 269°	270° 359°
ODD Thousand	ODD +500 ft	EVEN Thousand	EVEN +500 ft
3000 ft	3500 ft	4000 ft	4500 ft
5000 ft	5500 ft	6000 ft	6500 ft
7000 ft	7500 ft	8000 ft	8500 ft
9000 ft	9500 ft	10000 ft	10500 ft
11000 ft	11500 ft	12000 ft	12500 ft
13000 ft	13500 ft		

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

**Table 3 : Non-RVSM Semi - Circular cruising levels within Kathmandu FIR
VNSM**

TRACK							
From 000 degrees to 179 degrees				From 180 degrees to 359 degrees			
IFR Flight		VFR Flight		IFR Flight		VFR Flight	
Flight Level	Altitude (Ft)	Flight Level	Altitude (Ft)	Flight Level	Altitude (Ft)	Flight Level	Altitude (Ft)
150	15000	155	15500	160	16000	165	16500
170	17000	175	17500	180	18000	185	18500
190	19000	195	19500	200	20000		
210	21000			220	22000		
230	23000			240	24000		
250	25000			260	26000		
270	27000			280	28000		
290	29000			310	31000		
330	33000			350	35000		
370	37000			390	39000		
410	41000			430	43000		
450	45000						

APPENDIX 4. REMOTELY PILOTED AIRCRAFT SYSTEMS**(Note.— See Chapter 3, 3.1.9 of the CAR)**

Note.— The manual on Remotely Piloted Aircraft System (RPAS)(Doc 10019) contains explanatory information related to remotely piloted aircraft systems.

1. General operating rules

1.1 A remotely piloted aircraft system (RPAS) engaged in international air navigation shall not be operated without appropriate authorization from the State from which the take-off of the remotely piloted aircraft (RPA) is made.

1.2 An RPA shall not be operated across the territory of another State without special authorization issued by CAAN and other States in which the flight is to operate. This authorization may be in the form of agreements between the States involved.

1.3 An RPA shall not be operated over the high seas without prior coordination with the appropriate ATS authority.

1.4 The authorization and coordination referred to in 1.2 and 1.3 shall be obtained prior to take-off if there is reasonable expectation, when planning the operation, that the aircraft may enter the airspace concerned.

1.5 An RPAS shall be operated in accordance with conditions specified by the State of Registry, the State of the Operator, if different, and the State(s) in which the flight is to operate.

1.6 Flight plans shall be submitted in accordance with Chapter 3 of this CAR or as otherwise mandated by the State(s) in which the flight is to operate.

1.7 RPAS shall meet the performance and equipment carriage requirements for the specific airspace in which the flight is to operate.

2. Certificates and licensing

2.1 An RPAS shall be approved, taking into account the interdependencies of the components, in accordance with national regulations and in a manner that is consistent with the provisions of related CARs. In addition:

- a) An RPA shall have a certificate of airworthiness issued in accordance with applicable national regulations and in a manner that is consistent with the provisions of NCAR; and
- b) The associated RPAS components specified in the type design shall be certificated and maintained in accordance with national regulations and in a manner that is consistent with the provisions of related CARs.

2.2 An operator shall have an RPAS operator certificate issued in accordance with national regulations and in a manner that is consistent with the provisions of FOR.

2.3 Until 2 November 2022, Remote pilots shall be licensed, or have their licences rendered valid, in accordance with national regulations and in a manner that is consistent with the provisions of PELR. As of 3 November 2022, remote pilots shall be licensed, or have licenses rendered valid in accordance with the provisions of PELR.

3. Request for authorization

3.1 The request for authorization referred to in 1.2 above shall be made to the appropriate authorities of the State(s) in which the RPA will operate not less than seven days before the date of the intended flight unless otherwise specified by the State.

3.2 Unless otherwise specified by the State(s), the request for authorization shall include the following:

- a) name and contact information of the operator;
- b) RPA characteristics (type of aircraft, maximum certificated take-off mass, number of engines, wing span);
- c) copy of certificate of registration;
- d) aircraft identification to be used in radiotelephony, if applicable;
- e) copy of the certificate of airworthiness;
- f) copy of the RPAS operator certificate;
- g) copy of the remote pilot(s) licence;
- h) copy of the aircraft radio station licence, if applicable;
- i) description of the intended operation (to include type of operation or purpose), flight rules, visual line-of-sight (VLOS) operation if applicable, date of intended flight(s), point of departure, destination, cruising speed(s), cruising level(s), route to be followed, duration/frequency of flight;
- j) take-off and landing requirements;
- k) RPA performance characteristics, including:
 - 1) operating speeds;
 - 2) typical and maximum climb rates;
 - 3) typical and maximum descent rates;

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- 4) typical and maximum turn rates;
 - 5) other relevant performance data (e.g. limitations regarding wind, icing, precipitation); and
 - 6) maximum aircraft endurance;
- l) communications, navigation and surveillance capabilities:
 - 1) aeronautical safety communications frequencies and equipment, including:
 - i) ATC communications, including any alternate means of communication;
 - ii) command and control links (C2) including performance parameters and designated operational coverage area;
 - iii) communications between remote pilot and RPA observer, if applicable;
 - 2) navigation equipment; and
 - 3) surveillance equipment (e.g. SSR transponder, ADS-B out);
 - m) detect and avoid capabilities;
 - n) emergency procedures, including:
 - 1) communications failure with ATC;
 - 2) C2 failure; and
 - 3) remote pilot/RPA observer communications failure, if applicable;
 - o) number and location of remote pilot stations as well as handover procedures between remote pilot stations, if applicable;
 - p) document attesting noise certification that is consistent with the provisions of Annex 16, Volume 1, if applicable;
 - q) confirmation of compliance with national security standards in a manner that is consistent with the provisions of Annex 17, to include security measures relevant to the RPAS operation, as appropriate;
 - r) payload information/description; and
 - s) proof of adequate insurance/liability coverage.

3.3 When certificates or other documents identified in 3.2 above are issued in a language other than English, an English translation shall be included.

3.4 After authorization has been obtained from the appropriate State(s), air traffic services notification and coordination shall be completed in accordance with the requirements of the State(s).

Note.— A request for authorization does not satisfy the requirement to file a flight plan with the air traffic services units.

3.5 Changes to the authorization shall be submitted for consideration to the appropriate State(s). If the changes are approved, all affected authorities shall be notified by the operator.

3.6 In the event of a flight cancellation, the operator or remote pilot shall notify all appropriate authorities as soon as possible.

APPENDIX-5**UNMANNED FREE BALLOONS**

(Note.— See Para 3.1.10 of the CAR)

1. Classification of unmanned free balloons

Unmanned free balloons shall be classified as:

- a) light: an unmanned free balloon which carries a payload of one or more packages with a combined mass of less than 4 kg, unless qualifying as a heavy balloon in accordance with c) 2), 3) or 4) below; or
- b) medium: an unmanned free balloon which carries a payload of two or more packages with a combined mass of 4 kg or more, but less than 6 kg, unless qualifying as a heavy balloon in accordance with c)2),3) or 4)below; or
- c) heavy: an unmanned free balloon which carries a payload which:
 - 1) has a combined mass of 6 kg or more; or
 - 2) includes a package of 3 kg or more; or
 - 3) includes a package of 2 kg or more with an area density of more than 13 g per square centimetre; or
 - 4) uses a rope or other device for suspension of the payload that requires an impact force of 230 N or more to separate the suspended payload from the balloon.

Note 1.— The area density referred to in c) 3) is determined by dividing the total mass in grams of the payload package by the area in square centimeters of its smallest surface. Note 2. — See Figure 4.1.

2. General operating rules

- 2.1 An unmanned free balloon shall not be operated without appropriate authorization from the State from which the launch is made.
- 2.2 An unmanned free balloon, other than a light balloon used exclusively for meteorological purposes and operated in the manner prescribed by the appropriate authority, shall not be operated across the territory of another State without appropriate authorization from the other State concerned.
- 2.3 The authorization referred to in 2.2 shall be obtained prior to the launching of the balloon if there is reasonable expectation, when planning the operation, that the balloon may drift into airspace over the territory of another State. Such authorization may be obtained for a series of balloon flights or for a particular type of recurring flight, e.g. atmospheric research balloon flights.

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- 2.4 An unmanned free balloon shall be operated in accordance with conditions specified by the State of Registry and the State(s) expected to be overflown.
- 2.5 An unmanned free balloon shall not be operated in such a manner that impact of the balloon, or any part thereof, including its payload, with the surface of the earth, creates a hazard to persons or property not associated with the operation.
- 2.6 A heavy unmanned free balloon shall not be operated over the high seas without prior co-ordination with the appropriate ATS authority.

3. Operating limitations and equipment requirements

- 3.1 A heavy unmanned free balloon shall not be operated without authorization from the appropriate ATS authority at or through any level below 18000 m (60 000 ft) pressure altitude at which:
- a) there are clouds or obscuring phenomena of more than four octas coverage; or
 - b) the horizontal visibility is less than 8 km.
- 3.2 A heavy or medium unmanned free balloon shall not be released in a manner that will cause it to fly lower than 300 m (1 000 ft) over the congested areas of cities, towns or settlements or an open-air assembly of persons not associated with the operation.
- 3.3 A heavy unmanned free balloon shall not be operated unless:
- a) it is equipped with at least two payload flight termination devices or systems, whether automatic or operated by tele-command, that operate independently of each other;
 - b) for polyethylene zero-pressure balloons, at least two methods, systems, devices, or combinations thereof, that function independently of each other are employed for terminating the flight of the balloon envelope;

Note.— Super pressure balloons do not require these devices as they quickly rise after payload discharge and burst without the need for a device or system designed to puncture the balloon envelope. In this context a super pressure balloon is a simple non-extensible envelope capable of withstanding a differential of pressure, higher inside than out. It is inflated so that the smaller night-time pressure of the gas still fully extends the envelope. Such a super pressure balloon will keep essentially constant level until too much gas diffuses out of it.

- c) the balloon envelope is equipped with either a radar reflective device(s) or radar reflective material that will present an echo to surface radar operating in the 200 MHz to 2 700 MHz frequency range, and/or the balloon is equipped with such other devices as will permit continuous tracking by the operator beyond the range of ground-based radar.
- 3.4 A heavy unmanned free balloon shall not be operated under the following conditions:
- a) in an area where ground-based SSR equipment is in use, unless it is equipped with a secondary surveillance radar transponder, with pressure-altitude reporting capability, which is continuously operating on an assigned code, or which can be turned on when necessary by the tracking station; or
- b) in an area where ground-based ADS-B equipment is in use, unless it is equipped with an ADS-B transmitter, with pressure-altitude reporting capability, which is continuously operating or which can be turned on when necessary by the tracking station.
- 3.5 An unmanned free balloon that is equipped with a trailing antenna that requires a force of more than 230 N to break it at any point, shall not be operated unless the antenna has coloured pennants or streamers that are attached at not more than 15m intervals.
- 3.6 A heavy unmanned free balloon shall not be operated below 18 000 m (60 000 ft) pressure-altitude between sunset and sunrise or such other period between sunset and sunrise (corrected to the altitude of operation) as may be prescribed by the appropriate ATS authority, unless the balloon and its attachments and payload, whether or not they become separated during the operation, are lighted.
- 3.7 A heavy unmanned free balloon that is equipped with a suspension device (other than a highly conspicuously coloured open parachute) more than 15m long, shall not be operated between sunrise and sunset below 18000 m (60000 ft) pressure-altitude unless the suspension device is coloured in alternate bands of high conspicuity colours or has coloured pennants attached.
4. Termination
- The operator of a heavy unmanned free balloon shall activate the appropriate termination devices required by 3.3 a) and b) above:
- a) when it becomes known that weather conditions are less than those prescribed for the operation;
- b) if a malfunction or any other reason makes further operation hazardous to air traffic or to persons or property on the surface; or
- c) prior to unauthorized entry into the airspace over another State's territory.

5. Flight notification

Pre-flight notification

- 5.1.1 Early notification of the intended flight of an unmanned free balloon in the medium or heavy category shall be made to the appropriate air traffic services unit not less than seven days before the date of the intended flight.
- 5.1.2 Notification of the intended flight shall include such of the following information as may be required by the appropriate air traffic services unit:
- a) balloon flight identification or project code name;
 - b) balloon classification and description;
 - c) SSR code, aircraft address or NDB frequency as applicable;
 - d) operator's name and telephone number;
 - e) launch site;
 - f) estimated time of launch (or time of commencement and completion of multiple launches);
 - g) number of balloons to be launched and the scheduled interval between launches (if multiple launches);
 - h) expected direction of ascent;
 - i) cruising level(s) (pressure-altitude);
 - j) the estimated elapsed time to pass 18 000 m (60 000 ft) pressure-altitude or to reach cruising level if at or below 18 000 m (60 000 ft), together with the estimated location;
- Note.— If the operation consists of continuous launchings, the time to be included is the estimated time at which the first and the last in the series will reach the appropriate level (e.g. 122136Z-130330Z).*
- k) the estimated date and time of termination of the flight and the planned location of the impact/recovery area. In the case of balloons carrying out flights of long duration, as a result of which the date and time of termination of the flight and the location of impact cannot be forecast with accuracy, the term "long duration" shall be used.
- Note.— If there is to be more than one location of impact/recovery, each location is to be listed together with the appropriate estimated time of impact. If there is to be a series of continuous impacts, the time to be included is the estimated time of the first and the last in the series (e.g. 070330Z-072300Z).*
- 5.1.3 Any changes in the pre-launch information notified in accordance with 5.1.2 above shall be forwarded to the air traffic services unit concerned not less than 6 hours before the estimated time of launch, or in the case of solar or cosmic disturbance investigations involving a critical time element, not less than 30 minutes before the estimated time of the commencement of the operation.

5.2 Notification of launch

Immediately after a medium or heavy unmanned free balloon is launched the operator shall notify the appropriate air traffic services unit of the following:

- a) balloon flight identification;
- b) launch site;
- c) actual time of launch;
- d) estimated time at which 18000 m (60000 ft) pressure altitude will be passed, or the estimated time at which the cruising level will be reached if at or below 18 000 m (60 000 ft), and the estimated location; and
- e) any changes to the information previously notified in accordance with 5.1.2 g) and h).

5.3 Notification of cancellation

The operator shall notify the appropriate air traffic services unit immediately it is known that the intended flight of a medium or heavy unmanned free balloon, previously notified in accordance with 5.1, has been cancelled.

6. Position recording and reports

- 6.1 The operator of a heavy unmanned free balloon operating at or below 18000 m (60 000 ft) pressure-altitude shall monitor the flight path of the balloon and forward reports of the balloon's position as requested by air traffic services. Unless air traffic services require reports of the balloon's position at more frequent intervals, the operator shall record the position every 2 hours.
- 6.2 The operator of a heavy unmanned free balloon operating above 18000 m (60 000 ft) pressure-altitude shall monitor the flight progress of the balloon and forward reports of the balloon's position as requested by air traffic services. Unless air traffic services require reports of the balloon's position at more frequent intervals, the operator shall record the position every 24 hours.
- 6.3 If a position cannot be recorded in accordance with 6.1 and 6.2, the operator shall immediately notify the appropriate air traffic services unit. This notification shall include the last recorded position. The appropriate air Traffic services unit shall be notified immediately when tracking of the balloon is re established.
- 6.4 One hour before the beginning of planned descent of a heavy unmanned free balloon, the operator shall forward to the appropriate ATS unit the following information regarding the balloon:
.

- a) the current geographical position;
- b) the current level (pressure-altitude);
- c) the forecast time of penetration of 18 000 m (60 000 ft) pressure-altitude, if applicable;
- d) the forecast time and location of ground impact^{6.5}The operator of a heavy or medium unmanned free balloon shall notify the appropriate air traffic services unit when the operation is ended.

CHARACTERISTICS		PAYLOAD MASS (kilogrammes)					
		1	2	3	4	5	6 or more
ROPE or OTHER SUSPENSION 230 Newtons or MORE		HEAVY					
INDIVIDUAL PAYLOAD PACKAGE	AREA DENSITY more than 13 g/cm ²						
<div style="border: 1px dashed black; padding: 5px; width: fit-content;"> AREA DENSITY CALCULATION <i>MASS (g)</i> ----- <i>Area of smallest surface (cm²)</i> </div>		AREA DENSITY less than 13 g/cm ²		MEDIUM			
COMBINED MASS (if Suspension OR Area density OR Mass of individual package are not factors)		LIGHT					

Figure 4.1 Classification of unmanned free balloons

ATTACHMENT A. INTERCEPTION OF CIVIL AIRCRAFT

(Note.— See Chapter 3, 3.8 of the CAR and associated Note)

Note.— In the interest of completeness, the substance of the provisions in Appendix 2 to the CAR is incorporated in this Attachment.

1. In accordance with Article 3 d) of the Convention on International Civil Aviation the Contracting States of ICAO “undertake, when issuing regulations for their state aircraft, that they will have due regard for the safety of navigation of civil aircraft”. As interceptions of civil aircraft are, in all cases, potentially hazardous, the Council of ICAO has formulated the following special recommendations which Contracting States are urged to implement through appropriate regulatory and administrative action. The uniform application by all concerned is considered essential in the interest of safety of civil aircraft and their occupants. For this reason the Council of ICAO invites Contracting States to notify ICAO of any differences which may exist between their national regulations or practices and the special recommendations hereunder.

2. General

2.1 Interception of civil aircraft should be avoided and should be undertaken only as a last resort. If undertaken, the interception should be limited to determining the identity of the aircraft, unless it is necessary to return the aircraft to its planned track, direct it beyond the boundaries of national airspace, guide it away from a prohibited, restricted or danger area or instruct it to effect a landing at a designated aerodrome. Practice interception of civil aircraft is not to be undertaken.

2.2 To eliminate or reduce the need for interception of civil aircraft, it is important that:

- a) all possible efforts be made by intercept control units to secure identification of any aircraft which may be a civil aircraft, and to issue any necessary instructions or advice to such aircraft, through the appropriate air traffic services units. To this end, it is essential that means of rapid and reliable communications between intercept control units and air traffic services units be established and that agreements be formulated concerning exchanges of information between such units on the movements of civil aircraft, in accordance with the provisions of Annex 11;
- b) areas prohibited to all civil flights and areas in which civil flight is not permitted without special authorization by the State be clearly promulgated in Aeronautical Information Publications (AIP) in accordance with the

provisions of Annex 15, together with the risk, if any, of interception in the event of penetration of such areas. When delineating such areas in close proximity to promulgated ATS routes, or other frequently used tracks, States should take into account the availability and overall systems accuracy of the navigation systems to be used by civil aircraft and their ability to remain clear of the delineated areas;

- c) the establishment of additional navigation aids be considered where necessary to ensure that civil aircraft are able safely to circumnavigate prohibited or, as required, restricted areas.

2.3 To eliminate or reduce the hazards inherent in interceptions undertaken as a last resort, all possible efforts should be made to ensure coordinated actions by the pilots and ground units concerned. To this end, it is essential that Contracting States take steps to ensure that:

- a) all pilots of civil aircraft be made fully aware of the actions to be taken by them and the visual signals to be used, as specified in Chapter 3 and Appendix 1 of this Annex;
- b) operators or pilots-in-command of civil aircraft implement the provisions in Annex 6, Parts I, II and III, regarding the capability of aircraft to communicate on 121.5 MHz and the availability of interception procedures and visual signals on board aircraft;
- c) all air traffic services personnel be made fully aware of the actions to be taken by them in accordance with the provisions of Annex 11, Chapter 2, and the PANS-ATM (Doc 4444);
- d) all pilots-in-command of intercepting aircraft be made aware of the general performance limitations of civil aircraft and of the possibility that intercepted civil aircraft may be in a state of emergency due to technical difficulties or unlawful interference;
- e) clear and unambiguous instructions be issued to intercept control units and to pilots-in-command of potential intercepting aircraft, covering interception manoeuvres, guidance of intercepted aircraft, action by intercepted aircraft, air-to-air visual signals, radiocommunication with intercepted aircraft, and the need to refrain from resorting to the use of weapons;

Note.— See paragraphs 3 to 8.

- f) intercept control units and intercepting aircraft be provided with radiotelephony equipment compatible with the technical specifications of Annex 10, Volume I, so as to enable them to communicate with intercepted aircraft on the emergency frequency 121.5 MHz;
- g) secondary surveillance radar and/or ADS-B facilities be made available to the extent possible to permit intercept control units to identify civil aircraft in areas where they might otherwise be intercepted. Such facilities should permit recognition of aircraft identity and immediate recognition of any emergency or urgency conditions.

3. Interception manoeuvres

3.1 A standard method should be established for the manoeuvring of aircraft intercepting a civil aircraft in order to avoid any hazard for the intercepted aircraft. Such method should take due account of the performance limitations of civil aircraft, the need to avoid flying in such proximity to the intercepted aircraft that a collision hazard may be created and the need to avoid crossing the aircraft's flight path or to perform any other manoeuvre in such a manner that the wake turbulence may be hazardous, particularly if the intercepted aircraft is a light aircraft.

3.2 An aircraft equipped with an airborne collision avoidance system (ACAS), which is being intercepted, may perceive the interceptor as a collision threat and thus initiate an avoidance manoeuvre in response to an ACAS resolution advisory. Such a manoeuvre might be misinterpreted by the interceptor as an indication of unfriendly intentions. It is important, therefore, that pilots of intercepting aircraft equipped with a secondary surveillance radar (SSR) transponder suppress the transmission of pressure-altitude information (in Mode C replies or in the AC field of Mode S replies) within a range of at least 37 km (20 NM) of the aircraft being intercepted. This prevents the ACAS in the intercepted aircraft from using resolution advisories in respect of the interceptor, while the ACAS traffic advisory information will remain available.

3.3 Manoeuvres for visual identification

The following method is recommended for the manoeuvring of intercepting aircraft for the purpose of visually identifying a civil aircraft:

Phase I

The intercepting aircraft should approach the intercepted aircraft from astern. The element leader, or the single intercepting aircraft, should normally take up a position on the left (port) side, slightly above and ahead of the intercepted aircraft, within the field of view of the pilot of the intercepted aircraft, and initially not closer to the aircraft than 300 m. Any other

participating aircraft should stay well clear of the intercepted aircraft, preferably above and behind. After speed and position have been established, the aircraft should, if necessary, proceed with Phase II of the procedure.

Phase II

The element leader, or the single intercepting aircraft, should begin closing in gently on the intercepted aircraft, at the same level, until no closer than absolutely necessary to obtain the information needed. The element leader, or the single intercepting aircraft, should use caution to avoid startling the flight crew or the passengers of the intercepted aircraft, keeping constantly in mind the fact that manoeuvres considered normal to an intercepting aircraft may be considered hazardous to passengers and crews of civil aircraft. Any other participating aircraft should continue to stay well clear of the intercepted aircraft. Upon completion of identification, the intercepting aircraft should withdraw from the vicinity of the intercepted aircraft as outlined in Phase III.

Phase III

The element leader, or the single intercepting aircraft, should break gently away from the intercepted aircraft in a shallow dive. Any other participating aircraft should stay well clear of the intercepted aircraft and rejoin their leader.

3.4 Manoeuvres for navigational guidance

3.4.1 If, following the identification manoeuvres in Phase I and Phase II above, it is considered necessary to intervene in the navigation of the intercepted aircraft, the element leader, or the single intercepting aircraft, should normally take up a position on the left (port) side, slightly above and ahead of the intercepted aircraft, to enable the pilot-in-command of the latter aircraft to see the visual signals given.

3.4.2 It is indispensable that the pilot-in-command of the intercepting aircraft be satisfied that the pilot-in-command of the intercepted aircraft is aware of the interception and acknowledges the signals given. If repeated attempts to attract the attention of the pilot-in-command of the intercepted aircraft by use of the Series 1 signal in Appendix 1, Section 2, are unsuccessful, other methods of signalling may be used for this purpose, including as a last resort the visual effect of the reheat/afterburner, provided that no hazard is created for the intercepted aircraft.

3.5 It is recognized that meteorological conditions or terrain may occasionally make it necessary for the element leader, or the single intercepting aircraft, to take up a position on the right (starboard) side, slightly above and ahead of the intercepted aircraft. In such case, the pilot-in-command of the intercepting aircraft must take particular care that the intercepting aircraft is clearly visible at all times to the pilot-in-command of the intercepted aircraft.

4. Guidance of an intercepted aircraft

4.1 Navigational guidance and related information should be given to an intercepted aircraft by radiotelephony, whenever radio contact can be established.

4.2 When navigational guidance is given to an intercepted aircraft, care must be taken that the aircraft is not led into conditions where the visibility may be reduced below that required to maintain flight in visual meteorological conditions and that the manoeuvres demanded of the intercepted aircraft do not add to already existing hazards in the event that the operating efficiency of the aircraft is impaired.

4.3 In the exceptional case where an intercepted civil aircraft is required to land in the territory overflown, care must also be taken that:

- a) the designated aerodrome is suitable for the safe landing of the aircraft type concerned, especially if the aerodrome is not normally used for civil air transport operations;
- b) the surrounding terrain is suitable for circling, approach and missed approach manoeuvres;
- c) the intercepted aircraft has sufficient fuel remaining to reach the aerodrome;
- d) if the intercepted aircraft is a civil transport aircraft, the designated aerodrome has a runway with a length equivalent to at least 2 500 m at mean sea level and a bearing strength sufficient to support the aircraft; and
- e) whenever possible, the designated aerodrome is one that is described in detail in the relevant Aeronautical Information Publication.

4.4 When requiring a civil aircraft to land at an unfamiliar aerodrome, it is essential that sufficient time be allowed it to prepare for a landing, bearing in mind that only the pilot-in-command of the civil aircraft can judge the safety of the landing operation in relation to runway length and aircraft mass at the time.

4.5 It is particularly important that all information necessary to facilitate a safe approach and landing be given to the intercepted aircraft by radiotelephony.

5. Action by intercepted aircraft

The Standards in Appendix 2, Section 2, specify as follows:

“2.1 An aircraft which is intercepted by another aircraft shall immediately:

- a) follow the instructions given by the intercepting aircraft, interpreting and responding to visual signals in accordance with the specifications in Appendix 1;

- b) notify, if possible, the appropriate air traffic services unit;
- c) attempt to establish radiocommunication with the intercepting aircraft or with the appropriate intercept control unit, by making a general call on the emergency frequency 121.5 MHz, giving the identity of the intercepted aircraft and the nature of the flight; and if no contact has been established and if practicable, repeating this call on the emergency frequency 243 MHz;
- d) if equipped with SSR transponder, select Mode A, Code 7700, unless otherwise instructed by the appropriate air traffic services unit.
- e) if equipped with ADS-B or ADS-C, select the appropriate emergency functionality, if available, unless otherwise instructed by the appropriate air traffic services unit.

“2.2 If any instructions received by radio from any sources conflict with those given by the intercepting aircraft by visual signals, the intercepted aircraft shall request immediate clarification while continuing to comply with the visual instructions given by the intercepting aircraft.

“2.3 If any instructions received by radio from any sources conflict with those given by the intercepting aircraft by radio, the intercepted aircraft shall request immediate clarification while continuing to comply with the radio instructions given by the intercepting aircraft.”

6. Air-to-air visual signals

The visual signals to be used by intercepting and intercepted aircraft are those set forth in Appendix 1 to this Annex. It is essential that intercepting and intercepted aircraft adhere strictly to those signals and interpret correctly the signals given by the other aircraft, and that the intercepting aircraft pay particular attention to any signals given by the intercepted aircraft to indicate that it is in a state of distress or urgency.

7. Radiocommunication between the intercept control unit or the intercepting aircraft and the intercepted aircraft

7.1 When an interception is being made, the intercept control unit and the intercepting aircraft should:

- a) first attempt to establish two-way communication with the intercepted aircraft in a common language on the emergency frequency 121.5 MHz, using the call signs “INTERCEPT CONTROL”, “INTERCEPTOR (call sign)” and “INTERCEPTED AIRCRAFT” respectively; and

- b) failing this, attempt to establish two-way communication with the intercepted aircraft on such other frequency or frequencies as may have been prescribed by the appropriate ATS authority, or to establish contact through the appropriate ATS unit(s).

7.2 If radio contact is established during interception but communication in a common language is not possible, attempts must be made to convey instructions, acknowledgement of instructions and essential information by using the phrases and pronunciations in Table A-1 and transmitting each phrase twice.

8. Refraining from the use of weapons

Note.— In the unanimous adoption by the 25th Session (Extraordinary) of the ICAO Assembly on 10 May 1984 of Article 3 bis to the Convention on International Civil Aviation,

Contracting States have recognized that “every State must refrain from resorting to the use of weapons against civil aircraft in flight”.

The use of tracer bullets to attract attention is hazardous, and it is expected that measures will be taken to avoid their use so that the lives of persons on board and the safety of aircraft will not be endangered.

9. Coordination between intercept control units and air traffic services units

It is essential that close coordination be maintained between an intercept control unit and the appropriate air traffic services unit during all phases of an interception of an aircraft which is, or might be, a civil aircraft, in order that the air traffic services unit is kept fully informed of the developments and of the action required of the intercepted aircraft.

Table A-1

<i>Phrases for use by INTERCEPTING aircraft</i>			<i>Phrases for use by INTERCEPTED aircraft</i>		
<i>Phrase</i>	<i>Pronunciation¹</i>	<i>Meaning</i>	<i>Phrase</i>	<i>Pronunciation¹</i>	<i>Meaning</i>
CALL SIGN	KOL SA-IN	What is your call sign?	CALL SIGN (call sign) ²	KOL SA-IN (call sign)	My call sign is (call sign)
FOLLOW	FOL-LO	Follow me	WILCO	VILL-KO	Understood Will comply
DESCEND	DEE-SEND	Descend for landing	CAN NOT	KANN NOTT	Unable to comply
YOU LAND	YOU LAAND	Land at this aerodrome	REPEAT	REE-PEET	Repeat your instruction
PROCEED	PRO-SEED	You may proceed	AM LOST	AM LOSST	Position unknown
			MAYDAY	MAYDAY	I am in distress
			HIJACK ³	HI-JACK	I have been hijacked
			LAND (place name)	LAAND (place name)	I request to land at (place name)
			DESCEND	DEE-SEND	I require descent

1. In the second column, syllables to be emphasized are underlined.

2. The call sign required to be given is that used in radiotelephony communications with air traffic services units and corresponding to the aircraft identification in the flight plan.

3. Circumstances may not always permit, nor make desirable, the use of the phrase “HIJACK”.

ATTACHMENT B. UNLAWFUL INTERFERENCE

1. General

The following procedures are intended as guidance for use by aircraft when unlawful interference occurs and the aircraft is unable to notify an ATS unit of this fact.

2. Procedures

2.1 If the pilot-in-command cannot proceed to an aerodrome in accordance with the rules in Chapter 3, 3.7.2, he/she should attempt to continue flying on the assigned track and at the assigned cruising level at least until able to notify an ATS unit or until within radar or ADS-B coverage.

2.2 When an aircraft subjected to an act of unlawful interference must depart from its assigned track or its assigned cruising level without being able to make radiotelephony contact with ATS, the pilot-in-command should, whenever possible:

- a) attempt to broadcast warnings on the VHF channel in use or the VHF emergency frequency, and other appropriate

channels, unless considerations aboard the aircraft dictate otherwise. Other equipment such as on-board transponders and data links should also be used when it is advantageous to do so and circumstances permit; and

- b) proceed in accordance with applicable special procedures for in-flight contingencies, where such procedures have been established and promulgated in the *Regional Supplementary Procedures* (Doc 7030); or
- c) if no applicable regional procedures have been established, proceed at a level which differs from the cruising levels normally used for IFR flight by:
 - 1) 150 m (500 ft) in an area where a vertical separation minimum of 300 m (1 000 ft) is applied; or
 - 2) 300 m (1 000 ft) in an area where a vertical separation minimum of 600 m (2 000 ft) is applied.

Note.— Action to be taken by an aircraft which is intercepted while being subject to an act of unlawful interference is prescribed in 3.8 of this Annex.

