FOREWORD

1. Legal Background

Pursuant to Article 33 of the Civil Aviation Act, 2010 regarding the empowerment of the Board of Directors of Civil Aviation to issue and amend Sudan Civil Aviation Regulations (SUCAR) for the approval of the Competent Minister, Sudan Civil Aviation Safety Regulations are issued to ensure compliance with the Convention on International Civil Aviation, signed in Chicago on 7 December 1944 (Chicago Convention) to which the State of Sudan is a Party. The Convention, through its Annexes, provides for the minimum standards to ensure the safety of civil aviation activities and environmental protection throughout the application and implementation of common standards and technical requirements. Sudan Civil Aviation Regulations provide an appropriate and comprehensive framework for the definition and implementation of common technical requirements and administrative procedures in the field of civil aviation. Standards and Recommended Practices (SARPs) contained in ICAO Annexes as well as the technical information in its related publications form a main source in the making of Sudan Civil Aviation Regulations and therefore represent an acceptable guidance in the areas that are not covered by Sudan Civil Aviation Regulations.

a) An aircraft, other than an aircraft registered in the State of Sudan, shall not fly over or land in the territories of the State of Sudan except under an authorization granted by the Civil Aviation Authority (CAA) on behalf of the Government of the State of Sudan.

b) An aircraft other than an aircraft registered in the State of Sudan shall not take on-board or discharge any passengers or cargo at any location within the territories of the State of Sudan, being passengers or cargo carried or to be carried for hire or reward, without the permission of the CAA granted for the aircraft in accordance with any conditions and limitations to which such permission may be subjected.

c) An aircraft shall not fly over or land in the territory of the State of Sudan unless it is registered in:
   i. The State of Sudan; or
   ii. An ICAO Contracting State; or
   iii. Any other State where an agreement/arrangement between the State of Sudan and that State making provisions for over-flight or landing in the territory of the State of Sudan.

d) In accordance with the provisions of SUCAR Part 7, an aircraft registered in the State of Sudan shall comply with the Sudan Civil Aviation Regulations.

e) An Aircraft, registered outside the State of Sudan shall comply with the Sudan Civil Aviation Regulations while operating to/from or within the territories of the State of Sudan wherever is applicable.

f) An aircraft registered in the State of Sudan should comply with the regulations of other States that it is overflying wherever is applicable.

g) Sudan CAA accepts the codes of the Type Certification Authority of the State of Manufacturer and/or Design, for the purpose of issuing or Revalidation of Airworthiness Certificates, Airworthiness Directives (ADs), Minimum Equipment List (MEL), and all other related issues in that respect. The Sudan Civil Aviation Authority may impose additional requirements.

h) Any difference that may exist between SUCAR requirements and corresponding ICAO Annex SARPs. Significant differences shall be published in the National AIP. The
procedure for amending the SUCARs and filing of differences with ICAO are contained in paragraph 4 below and detailed information is found in the CAA Rule Making Manual.

i) An effort has been made for SUCAR requirements to be fully compliant with corresponding ICAO Annexes; however, where an aviation activity for which a SUCAR regulation has not been promulgated is undertaken in the Sudan, the relevant Annex provisions shall be applicable until it is addressed in an amendment of the SUCAR.” Applicability date for SUCARs by users is set at six months after they have been promulgated (30 September 2011).

2. Layout of the SUCAR Document

Sudan Civil Aviation Regulations cover all aspects of aviation activities in the State of Sudan and comprise of the following parts;

Part 0 SUCAR Index
Part 1 Personnel Licensing
Part 2 Rules of the Air
Part 3 Meteorological Service for International Air Navigation
Part 4 Aeronautical Charts
Part 5 Units of Measurement
Part 6 Operation of Aircraft

Note: Designated as Volumes of SUCAR Part 6 in general; Standards contained in ANR Parts VII, Part VIII, Volumes 2, 3, 4, 5, 7 and ANR Part X, as amended, have been directly adopted as Volumes of SUCAR Part 6.

Part 7 Aircraft Registration or Cancellation
Part 8 Airworthiness of Aircraft and Continuing Airworthiness

Note: Designated as Volumes of SUCAR Part 8 in general; Standards contained in ANR Parts III, IV, V, VI, and VIII, as amended, have been directly adopted as Volumes of SUCAR Part 8.

Part 9 RESERVED (Facilitation)
Part 10 Aeronautical Telecommunications
Part 11 Air Traffic Services
Part 12 Search and Rescue
Part 13 Aircraft Accident and Incident Investigation
Part 14 Aerodromes
Part 15 Aeronautical Information Services
Part 16 Environmental Protection
Part 17 Aviation Security
Part 18 The Safe Transportation of Dangerous Goods by Air

Each Part of SUCAR, but not necessarily all, is composed of:

a) An introduction;
b) Text;
c) Definitions;
d) Notes;
e) Tables and figures;
f) Appendices; and
g) Attachments.
3 Rules of construction

In the Parts of these Regulations, unless the context requires otherwise:
1. Words importing the singular include the plural
2. Words importing the plural include the singular, and
3. Words importing the masculine gender include the feminine.
4. “Shall” is used in an imperative sense.
5. “May /should” is used in a permissive sense to state authority or permission to do the act prescribed, and the words “no person may....” Or “a person may not .....” means that no person is required, authorized or permitted to do the act prescribed, and
6. The word “Includes” means includes but is not limited to.
7. The word “Show” and its derivatives in these regulations have the exact intent as shown in the dictionary.

4 Amendment Rationale and Procedures

The existing Sudan Civil Aviation Regulations will from time to time be amended to reflect the latest updates of ICAO Standards and Recommended Practices (SARPs); it will also be amended to reflect the latest up to date aviation safety related matters detected by the Civil Aviation Authority, the aviation industry service providers or operators, and individuals and authorization holders; amendment may also be generated to ensure safety standardization and to accommodate new initiatives or technologies. The amendment procedure shall be as follows;
1. When the Civil Aviation Authority (CAA) receives an amendment to any of the current ICAO Annexes, the same will be routed by the Office of the Director General of Civil Aviation to the Standard and Safety Surveillance Committee (SSSC) which in turn will provide a copy to the concerned Directorate for their study and comments within a specified period of time and route the same back to the SSSC for final study and release.
2. When any of the different CAA Directorates requires a change to the applicable SUCAR parts, it will send a letter stating the required change along with its justified reasons for such change where it will then be studied and decided upon by the SSSC.
3. Any of the above mentioned change requests would then be prepared in draft form and sent to the concerned Directorate for further study and comments within a specified period of time.
4. All suggested changes will be drafted in the form of notices of proposed amendments and addressed to all concerned including industry representatives for comments prior to final release.
5. Any differences between the new regulations and ICAO standards and recommended practices will be reported and recorded as differences to ICAO and reflected in the Aeronautical Information Publications (AIP).
6. Entry into force time frame for any new regulations will be the responsibility of the SSSC. The SSSC will also be responsible for coordinating the identification of differences from corresponding ICAO Annexes in coordination with the concerned Directorates.
7. The Office of the Director General is responsible for filing differences with ICAO as soon as new regulations or amendments thereto have been promulgated.
8. All concerned parties will be given a copy of the new amendment and will be requested to update their copy of the regulations including their list of effective pages.
9. Approved amendments or corrigenda of SUCAR or part(s) thereof will be disseminated to the industry through hardcopies (news release circulars directives and other) and softcopies (online or database, Internet address, CD-ROM and other).
10. It is the responsibility of all concerned parties to keep their copy of the regulations up to date.
11. Where applicable, regulations contained in the Air Navigation Regulations (ANRs) that have not been revoked may be enforced should the need arise.
12. The State may release no regulation prior to the formal approval of the Competent Minister as determined in Civil Aviation Act 2010 or the Director General of Civil Aviation on delegation by the Competent Minister.

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CHAPTER 1
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 International Standards for Rules of the Air, they have the following meanings:

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

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

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

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

Note: The term “ADS contract” is a generic term meaning variously, ADS event contract, ADS demand contract, ADS periodic contract or an emergency mode. Ground forwarding of ADS reports may be implemented between ground systems.

4. **Advisory airspace.** An airspace of defined dimensions, or designated route, within which air traffic advisory service is available.

5. **Advisory route.** A designated route along which air traffic advisory service is available.

6. **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.

7. **Aerodrome control service.** Air traffic control service for aerodrome traffic.

8. **Aerodrome control tower.** A unit established to provide air traffic control service to aerodrome traffic.

9. **Aerodrome traffic.** All traffic on the manoeuvring area of an aerodrome and all aircraft flying in the vicinity of an aerodrome.

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

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

11. **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.
12. **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.

13. **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.

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

15. **Aircraft.** Any machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against the earth’s surface.

16. **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.

17. **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).

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

18. **Air traffic.** All aircraft in flight or operating on the manoeuvring area of an aerodrome.

19. **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.

20. **Air traffic control clearance.** Authorization for an aircraft to proceed under conditions specified by an air traffic control unit.

*Note1:* For convenience, the term “air traffic control clearance” is frequently abbreviated to “clearance” when used in appropriate contexts

*Note2:* 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.

21. **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.

22. **Air traffic control unit.** A generic term meaning variously, area control centre, approach control unit or aerodrome control tower.

23. **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).
24. **Air traffic services airspaces.** Airspaces of defined dimensions, alphabetically designated, within which specific types of flights may operate and for which air traffic services and rules of operation are specified.

*Note:* ATS airspaces are classified as Class A to G.

25. **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.

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

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

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

29. **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:

30. **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.

31. **En-route alternate.** An aerodrome at which an aircraft would be able to land after experiencing an abnormal or emergency condition while en route.

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

33. **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.

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

35. **Approach control service.** Air traffic control service for arriving or departing controlled flights.

36. **Approach control unit.** A unit established to provide air traffic control service to controlled flights arriving at, or departing from, one or more aerodromes.

37. **Appropriate ATS authority.** The relevant authority designated by the State responsible for providing air traffic services in the airspace concerned.

38. **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.
39. **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.

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

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

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

   **Note1:** The term “ATS route” is used to mean variously, airway, advisory route, controlled or uncontrolled route, arrival or departure route, etc.

   **Note2:** 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.

43. **Automatic dependent surveillance (ADS).** A surveillance technique in which aircraft automatically provide, via a data link, data derived from on-board navigation and position fixing systems, including aircraft identification, four-dimensional position and additional data as appropriate.

44. **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.

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

   **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.

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

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

48. **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.

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

   **Note:** Controlled airspace is a generic term which covers ATS airspace Classes A, B, C, D and E as described in ICAO Annex 11, 2.6.
50. **Controlled flight.** Any flight, which is subject to an air traffic control clearance.

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

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

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

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

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

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

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

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

59. **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.

60. **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.

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

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

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

64. **Flight information region.** An airspace of defined dimensions within which flight information service and alerting service are provided.

65. **Flight information service.** A service provided for the purpose of giving advice and information useful for the safe and efficient conduct of flights.

66. **Flight level.** A surface of constant atmospheric pressure which is related to a specific pressure datum, 1 013.2 hectopascals (hPa), and is separated from other such surfaces by specific pressure intervals.

*Note1:* A pressure type altimeter calibrated in accordance with the Standard Atmosphere:

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

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

c) when set to a pressure of 1 013.2 hPa, may be used to indicate flight levels.
Note 2: The terms “height” and “altitude”, used in Note 1 above, indicate altimetric rather than geometric heights and altitudes.

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

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

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

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

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

72. **IFR.** The symbol used to designate the instrument flight rules.

73. **IFR flight.** A flight conducted in accordance with the instrument flight rules.

74. **IMC.** The symbol used to designate instrument meteorological conditions.

75. **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.

76. **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 in Chapter 4.

77. **Landing area.** That part of a movement area intended for the landing or take-off of aircraft.

78. **Level.** A generic term relating to the vertical position of an aircraft in flight and meaning variously, height, altitude or flight level.

79. **Manoeuvring area.** That part of an aerodrome to be used for the take-off, landing and taxiing of aircraft, excluding aprons.

80. **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).

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

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

83. **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.

84. **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.

85. **Psychoactive substances.** Alcohol, opioids, cannabinoids, sedatives and hypnotics, cocaine, other psychostimulants, hallucinogens, and volatile solvents, whereas coffee and tobacco are excluded.
86. **Radiotelephony.** A form of radiocommunication primarily intended for the exchange of information in the form of speech.

87. **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.

88. **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.

89. **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.

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

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

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

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

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

   b) **Apron taxiway.** A portion of a taxiway system 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.

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

95. **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.

96. **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).

97. **Traffic avoidance advice.** Advice provided by an air traffic services unit specifying manoeuvres to assist a pilot to avoid a collision.
98. **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.

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

100. **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 4.

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

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

103. **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.

*Note1:* 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).

*Note2:* 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.

104. **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 in Chapter 4.

105. **VMC.** The symbol used to designate visual meteorological conditions.
CHAPTER 2
APPLICABILITY OF THE RULES OF THE AIR

2.2.1  **Territorial application of the rules of the air**

2.2.1.1  The rules of the air shall apply to aircraft bearing the nationality and registration marks of the Republic of Sudan, wherever they may be, to the extent that they do not conflict with the rules published by the State having jurisdiction over the territory overflown and it apply to all other aircraft operating in the territory and airspace of the Republic of Sudan.

*Note: These rules apply without exceptions over the high seas.*

2.2.1.2  If and so long as, Sudan CAA has not notified the International Civil Aviation Organization to the contrary, it shall be deemed, as regards aircraft of its registration, to have agreed as follows:

For purposes of flight over those parts of the high seas where a Contracting State has accepted, pursuant to a regional air navigation agreement, the responsibility of providing air traffic services, the “appropriate ATS authority” referred to in this Part is the relevant authority designated by the State responsible for providing those services.

*Note: The phrase “regional air navigation agreement” refers to an agreement approved by the Council of ICAO normally on the advice of a Regional Air Navigation Meeting.*

2.2.2  **Compliance with the rules of the air**

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: 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.*

2.2.3  **Responsibility for compliance with the rules of the air**

2.2.3.1  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.

2.2.3.2  Pre-flight action before beginning a flight, the pilot-in-command and the second 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.

2.2.4 **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.

2.2.5 **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.

2.2.6 **Consumption of Alcohol**
No person whose function is critical to the safety of the aviation (safety sensitive personnel) shall undertake that function:
1) while under the influence of alcohol; or
2) within 12 hours after consuming an alcoholic beverages.

2.2.7 **Fitness of Personnel**
No person, whose function is critical to the safety of the aviation (safety sensitive personnel), shall undertake that function if he is:
1) suffering or likely to suffer from fatigue; or
2) otherwise unfit to perform properly his duties.

2.2.8 **Age 60 Rule**
Sudanese license holders, who have attained their 60th birthday or, in the case of operations with more than one pilot where the other pilot is younger than 60 years of age, have attained their 65th birthday, are not permitted to act as pilot-in-command of an aircraft engaged in international commercial air transport operations

Sudanese license holders, who have attained their 65th birthday, are not permitted to act as co-pilot of an aircraft engaged in international commercial air transport operations.

2.2.9 **Smoking**
Smoking is prohibited on all commercial flights operated with aircraft registered in the Republic of Sudan, or on an aircraft registered with any Contracting State on lease to a Sudan CAA Air Operator Certificate holder for commercial passenger use. Amiri/VIP flights operated with 9K aircraft are exempted from this prohibition.

2.2.10 **Compliance with Rules and Regulations**
1) Every passenger on board an aircraft shall comply with all instructions given by any crewmember regarding the safety of the aircraft or of persons on board the aircraft.
2) Every crewmember on board an aircraft shall, during flight time, comply with the instructions of the pilot-in-command or of any person whom the pilot-in-command has authorized to act on behalf of the pilot-in-command.

2.2.11 **Airspeed Limitations**

1) Subject to subsection (2), no person shall operate an aircraft below 10,000 feet ASL at an indicated airspeed of more than 250 knots, or the speed specified for the area unless authorized by the air traffic control.

2) Where the minimum safe speed for the flight configuration of an aircraft is greater than the speed referred to in subsection (1), the aircraft shall be operated at the minimum safe speed.

2.2.12 **Rockets**

No person shall launch a rocket, other than a model rocket or a rocket of a type used in a fireworks display, except in accordance with an authorization issued by the Sudan CAA.

2.3.13 **Model Aircraft, Kites and Model Rockets**

No person, unless authorized, shall fly a model aircraft or a kite or launch a model rocket or a rocket of a type used in a fireworks display into cloud or in a manner that is or is likely to be hazardous to aviation safety.
CHAPTER 3
GENERAL RULES

2.3.1 Protection of persons and property

2.3.1.1 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.

2.3.1.2 Minimum heights
Except when necessary for take-off or landing, or except by permission from the appropriate authority, 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 3.4.6 for minimum heights for VFR flights and 3.5.1.2 for minimum levels for IFR flights.

2.3.1.3 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 Procedures for Air Navigation Services — Aircraft Operations (Doc 8168).

2.3.1.4 Dropping or spraying, Fuel Dumping
   a) Nothing shall be dropped or sprayed from an aircraft in flight 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.
   b) No person shall jettison fuel from an aircraft in flight unless:
       1. it is necessary to do so in order to ensure aviation safety;
       2. all appropriate measures are taken to minimize danger to human life and damage to the environment, insofar as the circumstances permit;
       and
       3. appropriate Air Traffic Control has been advised.

2.3.1.5 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.

2.3.1.6 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.

2.3.1.7 Acrobatic flight
No aircraft shall be flown acrobatically 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.

2.3.1.8 Formation flights
Aircraft shall not be flown in formation except by prearrangement among the pilots-in-command of the aircraft taking part in the flight and, for formation flight in controlled airspace, in accordance with the conditions prescribed by the appropriate ATS authority (ies). These conditions shall include the following:

a) the formation operates as a single aircraft with regard to navigation and position reporting;

b) separation between aircraft in the flight shall be the responsibility of the flight leader and the pilots-in command of the other aircraft in the flight and shall include periods of transition when aircraft are manoeuvring to attain their own separation within the formation and during join-up and break-away; and

c) a distance not exceeding 1 km (0.5 NM) laterally and longitudinally and 30 m (100 ft) vertically from the flight leader shall be maintained by each aircraft.

2.3.1.9 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 4.

2.3.1.10 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 State over whose territory the areas are established.

2.3.2 Avoidance of collisions

*Note:* It is important that vigilance for the purpose of detecting potential collisions be not relaxed on board an aircraft in flight, 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.

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

2.3.2.2 Right-of-way
The aircraft that has the right-of-way shall maintain its heading and speed, but 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 will best avert collision.
Note1: Operating procedures for use of ACAS are contained in PANS-OPS (Doc 8168), Volume I, Part VIII, Chapter 3.

Note2: Carriage requirements for ACAS equipment are addressed in SUCAR Part 6, Volume I.

2.3.2.2.1 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.

2.3.2.2 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.

2.3.2.2.3 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.

2.3.2.2.4 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.

2.3.2.2.5 Landing

2.3.2.2.5.1 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.

2.3.2.2.5.2 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.

2.3.2.2.5.3 Emergency landing. An aircraft that is aware that another is compelled to land shall give way to that aircraft.
2.3.2.2.6 Taking off. An aircraft taxiing on the manoeuvring area of an aerodrome shall give way to aircraft taking off or about to take off.

2.3.2.2.7 Surface movement of aircraft

2.3.2.2.7.1 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 2.3.2.2.4.

2.3.2.2.7.2 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 ICAO Annex 14, Volume I, 5.2.9 and 5.4.2.

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.

2.3.2.3 Lights to be displayed by aircraft

Note: The characteristics of lights intended to meet the requirements of 2.3.2.3 for aeroplanes are specified in ICAO Annex 6, Appendix 1. Detailed technical specifications for lights for aeroplanes are contained in ICAO Doc 9760 - Airworthiness Manual Volume II, Part A, Chapter 4 and for helicopters in Part A, Chapter 5 of that document.

2.3.2.3.1 Except as provided by 3.2.3.5, from sunset to sunrise or during any other period which may be prescribed by the appropriate authority 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.

2.3.2.3.2 Except as provided by 2.3.2.3.5, from sunset to sunrise or during any other period prescribed by the appropriate authority:
   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;
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 Red anti-collision lights which indicate that fact.

Note: If suitably located on the aircraft, the navigation lights referred to in 2.3.2.3.1 b) may also meet the requirements of 2.3.2.3.2 b). Red anti-collision lights fitted to meet the requirements of 2.3.2.3.1 a) may also meet the requirements of 2.3.2.3.2 c) and 2.3.2.3.2 d) provided they do not subject observers to harmful dazzle.

2.3.2.3.3 Except as provided by 2.3.2.3.5, all aircraft in flight and fitted with anti-collision lights to meet the requirement of 2.3.2.3.1 a) shall display such lights also outside the period specified in 2.3.2.3.1.

2.3.2.3.4 Except as provided by 2.3.2.3.5, all aircraft:
   a) operating on the movement area of an aerodrome and fitted with anti-collision lights to meet the requirement of 2.3.2.3.2 c); or
   b) on the movement area of an aerodrome and fitted with lights to meet the requirement of 2.3.2.3.2 d); shall display such lights also outside the period specified in 2.3.2.3.2.

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 2.3.2.3.1, 2.3.2.3.2, 2.3.2.3.3 and if they do or are likely to:
   a) adversely affect the satisfactory performance of duties; or
   b) subject an outside observer to harmful dazzle.

2.3.2.4 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.

2.3.2.5 Operation on and in the vicinity of an aerodrome
An aircraft operated on or in the vicinity of an aerodrome shall, whether or not within an aerodrome traffic zone:
   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.

Note: Additional rules may apply in aerodrome traffic zones.
2.3.2.6 Water operations

Note: In addition to the provisions of 2.3.2.6.1 of this Part, rules set forth in the International Regulations for Preventing Collisions at Sea, developed by the International Conference on Revision of the International Regulations for Preventing Collisions at Sea may be applicable in certain cases.

2.3.2.6.1 When two aircraft or an aircraft and a vessel are approaching one another and there is a risk of collision, the aircraft shall proceed with careful regard to existing circumstances and conditions including the limitations of the respective craft.

2.3.2.6.1.1 Converging. An aircraft which has another aircraft or a vessel on its right shall give way so as to keep well clear.

2.3.2.6.1.2 Approaching head-on. An aircraft approaching another aircraft or a vessel head-on or approximately so, shall alter its heading to the right to keep well clear.

2.3.2.6.1.3 Overtaking. The aircraft or vessel which is being overtaken has the right of way, and the one overtaking shall alter its heading to keep well clear.

2.3.2.6.1.4 Landing and taking off. Aircraft landing on or taking off from the water shall, in so far as practicable, keep well clear of all vessels and avoid impeding their navigation.

2.3.2.6.2 Lights to be displayed by aircraft on the water.

Between sunset and sunrise or such other period between sunset and sunrise as may be prescribed by the appropriate authority, all aircraft on the water shall display lights as required by the International Regulations for preventing Collisions at Sea unless it is impractical for them to do so, in which case they shall display lights as closely similar as possible in characteristics and position to those required by the International Regulations.

Note1: Specifications for lights to be shown by aeroplanes on the water are contained in the Appendices to Subpart 1 and 2 of Part 3.

Note2: The International Regulations for Preventing Collisions at Sea specify that the rules concerning lights shall be complied with from sunset to sunrise. Any lesser period between sunset and sunrise established in accordance with 2.3.2.6.2 cannot, therefore, be applied in areas where the International Regulations for Preventing Collisions at Sea apply, e.g. on the high seas.

2.3.3 Flight plans

2.3.3.1 Submission of a flight plan

2.3.3.1.1 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.

2.3.3.1.2 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 coordination 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.

2.3.3.1.3 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.

2.3.3.1.4 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.

2.3.3.2 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.

Note1:- 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.
Note2: 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.

Note3: The term “aerodrome” where used in the flight plan is intended to cover also sites other than aerodromes which may be used by certain types of aircraft, e.g. helicopters or balloons.

2.3.3.3 Completion of a flight plan

2.3.3.3.1 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.

2.3.3.3.2 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.

2.3.3.4 Changes to a flight plan

Subject to the provisions of 2.3.6.2.2, 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.

Note1: 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.

Note2: Procedures for submission of changes to repetitive flight plans are contained in the PANS-ATM (Doc 4444).

2.3.3.5 Closing a flight plan

2.3.3.5.1 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.

2.3.3.5.2 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.

2.3.3.5.3 When no air traffic services unit exists at the arrival aerodrome, the arrival report, when required, shall be made as soon as practicable after landing and by the quickest means available to the nearest air traffic services unit.

2.3.3.5.4 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.

2.3.3.5.5 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.

2.3.4 Signals

2.3.4.1 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.

2.3.4.2 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.

2.3.4.3 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.

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

2.3.4.5 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.

2.3.4.6 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.

2.3.5 Time

2.3.5.1 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.

2.3.5.2 A time check shall be obtained prior to operating a controlled flight and at such 
other times during the flight as may be necessary.
2.3.5.3 Wherever time is utilized in the application of data link communications, it shall be accurate to within 1 second of UTC.

2.3.6 **Air traffic control service**

2.3.6.1 **Air traffic control clearances**

2.3.6.1.1 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.

*Note1:* 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.

*Note2:*- 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.

2.3.6.1.2 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.

2.3.6.1.3 **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.

2.3.6.1.4 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.

2.3.6.2 **Adherence to flight plan**

2.3.6.2.1 Except as provided for in 2.3.6.2.2 and 2.3.6.2.4, an aircraft shall adhere to the current flight plan or the applicable portion of a current flight plan submitted for a controlled flight 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.
2.3.6.2.1 Unless otherwise authorized by the Sudan CAA, 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.

2.3.6.2.1.2 Subject to the overriding requirement in 2.3.6.2.1.1, 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.

2.3.6.2.1.3 Deviation from the requirements in 2.3.6.2.1.1 shall be notified to the appropriate air traffic services unit. 2.3.6.2.2 Inadvertent changes.

In the event that a controlled flight inadvertently 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) Variation in true airspeed: if the average true airspeed at cruising level between reporting points varies or is expected to vary by plus or minus 5 per cent of the true airspeed, from that given in the flight plan, the appropriate air traffic services unit shall be so informed.
   c) Change in time estimate: if the time estimate for the next applicable reporting point, flight information region boundary or destination aerodrome, whichever comes first, is found to be in error in excess of three minutes from that notified to air traffic services, or such other period of time as is prescribed by the appropriate ATS authority or on the basis of air navigation regional agreements, a revised estimated time shall be notified as soon as possible to the appropriate air traffic services unit.

2.3.6.2.2.1 Additionally, when an ADS agreement is in place, the air traffic services unit (ATSU) shall be informed automatically via data link whenever changes occur beyond the threshold values stipulated by the ADS event contract.

2.3.6.2.3 Intended changes. Requests for flight plan changes shall include information as indicated hereunder:
   a) Change of cruising level: aircraft identification; requested new cruising level and cruising speed at this level, revised time estimates (when applicable) at subsequent flight information region boundaries.
   b) 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.
2.3.6.2.4 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.

2.3.6.3 Position reports

2.3.6.3.1 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.

2.3.6.3.1.1 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 SSR Mode C transmission of pressure-altitude satisfies the requirement for level information in position reports are indicated in the PANS-ATM (Doc 4444).

2.3.6.4 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.

2.3.6.5 Communications

2.3.6.5.1 An aircraft operated as a controlled flight shall maintain continuous air-ground voice communication watch on the appropriate communication channel of, 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.

Note1: SELCAL or similar automatic signalling devices satisfy the requirement to maintain an air-ground voice communication watch.

Note2: The requirement for an aircraft to maintain air-ground voice communication watch remains in effect after CPDLC has been established.
2.3.6.5.2 Communication failure. If a communication failure precludes compliance with 2.3.6.5.1, the aircraft shall comply with the voice communication failure procedures of Annex 10, Volume II, and with such of the following procedures as are appropriate. The aircraft shall attempt to establish communications with the appropriate 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.

2.3.6.5.2.1 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 instrument flight rules.

2.3.6.5.2.2 If in instrument meteorological conditions or when the pilot of an IFR flight considers inadvisable to complete the flight in accordance with instrument flight rules.

2.3.6.5.2.3 The aircraft shall:
   a) unless otherwise prescribed on the basis of regional air navigation agreement, in airspace where radar is not used in the provisions 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.
   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
2.3.7 **Unlawful interference**
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.

**Note1:** Responsibility of ATS units in situations of unlawful interference is contained in SUCAR Part 11.

**Note2:** 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 B to this Part.

**Note3:** Action to be taken by CPDLC-equipped aircraft which are being subjected to unlawful interference is contained in SUCAR Part 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).

2.3.8 **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).

2.3.8.1 Sudanese State aircraft when intercepting civil aircraft shall have due regard for the safety of navigation of civil aircraft and shall, as much as possible, avoid risk of danger.

2.3.8.2 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.

2.3.9 **VMC visibility and distance from cloud minima**
VMC visibility and distance from cloud minima are contained in Table 3.1 next page:
**Table 3-1**
(see 4.1)

<table>
<thead>
<tr>
<th>Airspace class</th>
<th>A**B C D E</th>
<th>F</th>
<th>G</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ABOVE 900 m (3 000 ft)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AMSL or above 300 m (1 000 ft) above terrain, whichever is the higher</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>At and below 900 m (3 000 ft)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AMSL or 300 m (1 000 ft) above terrain, whichever is the higher</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Distance from cloud</strong></td>
<td>1 500 m horizontally</td>
<td></td>
<td></td>
</tr>
<tr>
<td>300 m (1 000 ft) vertically</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Clear of cloud and in sight of the surface</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Flight visibility</strong></td>
<td>8 km at and above 3 050 m (10 000 ft) AMSL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 km below 3 050 m (10 000 ft) AMSL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 km**</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* When the height of the transition altitude is lower than 3 050 m (10 000 ft) AMSL, FL 100 should be used in lieu of 10 000 ft.

** When so prescribed by the appropriate ATC authority:

a) Lower flight visibilities to 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.***
CHAPTER 4
VISUAL FLIGHT RULES

2.4.1 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.

2.4.2 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 (1500 ft); or
   b) when the ground visibility is less than 5 km.

2.4.3 VFR flights between sunset and sunrise, or such other period between sunset and sunrise as may be prescribed by the appropriate ATS authority, shall be operated in accordance with the conditions prescribed by such authority.

2.4.4 Unless authorized by the appropriate ATS authority, VFR flights shall not be operated:
   a) above FL 200;
   b) at transonic and supersonic speeds.

2.4.5 Authorization for VFR flights to operate above FL 290 shall not be granted in areas where a vertical separation minimum of 300 m (1000 ft) is applied above FL 290.

2.4.6 Except when necessary for take-off or landing, or except by permission from the appropriate authority, 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 (1 000 ft) above the highest obstacle within a radius of 600 m from the aircraft;
   b) elsewhere than as specified in 2.4.6 a), at a height less than 150 m (500 ft) above the ground or water.

2.4.7 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 flight level appropriate to the track as specified in the Tables of cruising levels in Appendix 3.

2.4.8 VFR flights shall comply with the provisions of 2.3.6:
   a) when operated within Classes B, C and D airspace; when forming part of aerodrome traffic at controlled aerodromes; or
   b) when operated as special VFR flights.

2.4.9 A VFR flight operating within or into areas, or along routes, designated by the appropriate ATS authority in accordance with 2.3.3.1.2 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.
2.4.10 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 2.3.3.1.2, submit a flight plan to the appropriate air traffic services unit and obtain a clearance prior to proceeding IFR when in controlled airspace.
CHAPTER 5
INSTRUMENT FLIGHT RULES

2.5.1 Rules applicable to all IFR flights

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

2.5.1.2 Minimum levels
Except when necessary for take-off or landing, or except when specifically authorized by the appropriate authority, 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 300 m (1000 ft) above the highest obstacle located within 8 km of the estimated position of the aircraft.

Note: 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.

2.5.1.3 Change from IFR flight to VFR flight

2.5.1.3.1 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.

2.5.1.3.2 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.

2.5.2 Rules applicable to IFR flights within controlled airspace

2.5.2.1 IFR flights shall comply with the provisions of 2.3.6 when operated in controlled airspace.

2.5.2.2 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:

a) the Tables of cruising levels in Appendix 3, or

b) a modified table of cruising levels, when so prescribed in accordance with Appendix 3 for flight above FL 410, 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.

2.5.3 **Rules applicable to IFR flights outside controlled airspace**

2.5.3.1 **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:

a) the Tables of cruising levels in Appendix 3, except when otherwise specified by the appropriate ATS authority for flight at or below 900 m (3000 ft) above mean sea level; or

b) a modified table of cruising levels, when so prescribed in accordance with Appendix 3 for flight above FL 410.

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

2.5.3.2 **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 2.3.3.1.2 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.

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

a) submit a flight plan,

b) 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 2.3.6.3 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 2.3.6, 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 ICAO Annex 10, Volume II, Chapter 5.

Note 3: For details of the search and rescue visual signals, see ICAO 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 1 300 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,
   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

<table>
<thead>
<tr>
<th>Series</th>
<th>INTERCEPTING Aircraft Signals</th>
<th>Meaning</th>
<th>INTERCEPTED Aircraft Responds</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>DAY or NIGHT — Raising 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, with acknowledgement, a slow level turn, normally to the left (or to the right in the case of a helicopter) on the desired heading.</td>
<td>You have been intercepted. Follow me.</td>
<td>DAY or NIGHT — Raising aircraft, flashing navigational lights at irregular intervals and following.</td>
<td>Understood, will comply</td>
</tr>
<tr>
<td></td>
<td><strong>Note 1.</strong> Meteorological conditions or terrain may require the intercepting aircraft to reverse the positions and direction of turn given above in Series 1.</td>
<td></td>
<td><strong>Note 2.</strong> If the intercepted aircraft is not able to keep pace with the intercepting aircraft, the latter is expected to fly a series of racetrack patterns and to track the aircraft each time it passes the intercepted aircraft.</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>DAY or NIGHT — An abrupt break-away manoeuvre from the intercepted aircraft consisting of a climbing turn of 90 degrees or more without exceeding the line of sight of the intercepted aircraft.</td>
<td>You may proceed</td>
<td>DAY or NIGHT — Raising the aircraft.</td>
<td>Understood, will comply</td>
</tr>
<tr>
<td>3</td>
<td>DAY or NIGHT — Lowering landing gear (if fitted), showing steady landing lights and following 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 the landing area.</td>
<td>Land at this aerodrome</td>
<td>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 it considered safe, proceeding to land.</td>
<td>Understood, will comply</td>
</tr>
</tbody>
</table>
2.2 Signals initiated by intercepted aircraft and responses by intercepting aircraft

<table>
<thead>
<tr>
<th>Series</th>
<th>INTERCEPTING Aircraft Signals</th>
<th>Meaning</th>
<th>INTERCEPTED Aircraft Responds</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>DAY or NIGHT — Raising landing gear if fitted, and flashing landing lights while passing over airport in use or helicopter landing area at a height exceeding 800 m (2625 ft) but not exceeding 600 m (2000 ft) in the case of a helicopter, or 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.</td>
<td>Audible: you have designated interceptors. Visual: 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.</td>
<td>DAY or NIGHT — If it is desired that the intercepting aircraft follows 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.</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>DAY or NIGHT — Regular switching on and off of all available lights</td>
<td>Cannot comply</td>
<td>DAY or NIGHT — Use Series 2 signals prescribed for intercepting aircraft.</td>
<td>Understood</td>
</tr>
<tr>
<td>6</td>
<td>DAY or NIGHT — Irregular flashing of all available lights</td>
<td>In distance</td>
<td>DAY or NIGHT — Use Series 3 signals prescribed for intercepting aircraft.</td>
<td>Understood</td>
</tr>
</tbody>
</table>

3. VISUAL SIGNALS USED TO WARN AN UNAUTHORIZED AIRCRAFT FLYING IN, 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

<table>
<thead>
<tr>
<th>Light</th>
<th>From Aerodrome Control to:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aircraft in flight</td>
<td>Aircraft on ground</td>
</tr>
<tr>
<td>Directed towards aircraft concerned (see figure 1)</td>
<td></td>
</tr>
<tr>
<td>Steady green</td>
<td>Cleared to land</td>
</tr>
<tr>
<td>Steady Red</td>
<td>Give way to other aircraft and continue circling</td>
</tr>
<tr>
<td>Series of green flashes</td>
<td>Return for landing</td>
</tr>
<tr>
<td>Series of red flashes</td>
<td>Aerodrome unsafe, do not land</td>
</tr>
<tr>
<td>Series of white flashes</td>
<td>Land at this aerodrome and proceed to start</td>
</tr>
<tr>
<td>Red pyrotechnic</td>
<td>Notwithstanding any previous instructions, do not land for the time being</td>
</tr>
<tr>
<td></td>
<td>Clear for take off</td>
</tr>
<tr>
<td></td>
<td>Step</td>
</tr>
<tr>
<td></td>
<td>Cleared to taxi</td>
</tr>
<tr>
<td></td>
<td>Test clear of landing area in use</td>
</tr>
<tr>
<td></td>
<td>Return to starting point on the aerodrome</td>
</tr>
</tbody>
</table>

* Clearance to land and 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 ICAO 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

![Figure 1.2](image)

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.
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.

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.

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.

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.

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.
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.

Figure 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.

Figure 1.11

5 Marshalling Signals

5.1 From a signalman to an aircraft

Note1: 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 left side of aircraft, where best seen by the pilot; and
b) for helicopters, where the signalman can best be seen by the pilot.

Note2: The meaning of the relevant signals remains the same if bats, illuminated wands or torchlights are held.

Note3: 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).

Note4: Signals marked with an asterisk (*) are designed for use to hovering helicopters.

Note5: References to wands may be also read to refer to daylight fluorescent-coloured table tennis bats or gloves (daytime only)

Note6: References to the signalman may also be read to refer to marshallar.
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 2.3.4.1, 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.

1. To proceed under further guidance by signalman

Signaller directs pilot
if traffic conditions on
aerodrome require this
action.

2. This bay

Arms above head in
vertical position with
palms facing inward.

3. Proceed to next signalman

Right or left arm down,
other arm moved
across the body and
extended to indicate
direction of next
signalman.

4. Move ahead

Arms a little aside,
palms facing backward
and repeatedly moved
upward-backward from
shoulder height.
5. Turn

a) Turn to your left:
right arm downward,
left arm repeatedly
moves upward-
backward. Speed of
arm movement anti-cating
rate of turn.

b) Turn to your right:
left arm downward,
right arm repeatedly
moves upward-
backward. Speed of
arm movement anti-cating
rate of turn.

6. Stop

Arms repeatedly
crossed above head
(the rapidity of the
arm movement
should be related to
the urgency of the
stop, i.e. the faster
the movement the
quicker the stop).

7. Brakes

a) Engage brakes:
raise arm and hand,
with fingers extended,
horizontally in front of
body, then clench fist.

b) Release brakes:
raise arm, with fist
clenched, horizontally
in front of body, then
extend fingers.

8. Chocks

a) Chocks inserted:
arms down, palms
facing inwards, move
arms from extended
position inwards.

b) Chocks removed:
arms down, palms
facing outwards, move
arms outwards.
5. Start engine(s)

Left hand overhead with appropriate number of fingers extended, to indicate the number of the engine to be started, and circular motion of right hand at head level.

10. Cut engines

Either arm and hand level with shoulder, hand across throat, palm downward. The hand is moved sideways with the arm remaining bent.

11. Slow down

Arms down with palms toward ground, then moved up and down several times.

12. Slow down engine(s) on indicated side

Arms down with palms toward ground, then either right or left hand waved up and down indicating the left or right side engine(s) respectively should be slowed down.
13. Move back

Arms by sides, palms facing forward, swept forward and upward repeatedly to shoulder height.

14. TURNS WHILE BACKING

a) For tail to starboard:
point left arm down, and right arm brought from overhead, vertical position to horizontal forward position, repeating right arm movement.

b) For tail to port:
point right arm down, and left arm brought from overhead, vertical position to horizontal forward position, repeating left arm movement.

15. All clear

Right arm raised at elbow with thumb erect.
15. Hover

Arms extended horizontally sideways.

17. Move upwards

Arms extended horizontally to the side beckoning upwards, with palms turned up. Speed of movement indicates rate of ascent.

18. Move downwards

Arms extended horizontally to the side beckoning downwards, with palms turned down. Speed of movement indicates rate of descent.

19. Move horizontally

Appropriate arm extended horizontally sideways in direction of movement and other arm moved in front of body in same direction, in a repeating movement.
5.2 From the pilot of an aircraft to a signalman

**Note1:** 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.

**Note2:** 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.

5.2.2 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.

5.2.3 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.
APPENDIX 2
INTERCEPTION OF CIVIL AIRCRAFT
(Note: - See Chapter 3, 3.8 of this Part)

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;
e) navigational guidance and related information will be given to an
intercepted aircraft by radiotelephony, whenever radio contact can be
established; and
f) in the case where an intercepted civil aircraft is required to land in the
territory overflown, 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, the Contracting States have recognized that “every State must refrain
from resorting to the use of weapons against civil aircraft in flight.”

1.2 A standard method has been established and published for the manoeuvring of
aircraft intercepting a civil aircraft. Such method is designed to avoid any hazard
for the intercepted aircraft and followed.

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

1.3 The use of secondary surveillance radar, where available, shall be used 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.

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 2.1 and transmitting each phrase twice:

<table>
<thead>
<tr>
<th>Phrase</th>
<th>Pronunciation</th>
<th>Meaning</th>
<th>Phrase</th>
<th>Pronunciation</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>CALL SIGN</td>
<td>KOL-3M-N</td>
<td>What is your call sign</td>
<td>CALL SIGN</td>
<td>KOL-3M-N</td>
<td>My call sign is (call sign)</td>
</tr>
<tr>
<td>FOLLOW</td>
<td>FOL-LO</td>
<td>Follow me</td>
<td>WILCO</td>
<td>WIL-ECO</td>
<td>Understood</td>
</tr>
<tr>
<td>DESCEND</td>
<td>DEE-SEND</td>
<td>Descend for landing</td>
<td>Will comply</td>
<td></td>
<td></td>
</tr>
<tr>
<td>YOU LAND</td>
<td>YO-3-LAND</td>
<td>Land at this aerodrome</td>
<td>CAN NOT</td>
<td>KAN-NUTT</td>
<td>Unable to comply</td>
</tr>
<tr>
<td>PROCEED</td>
<td>PRO-SEND</td>
<td>You may proceed</td>
<td>REPEAT</td>
<td>REE-P-EET</td>
<td>Repeat your instruction</td>
</tr>
<tr>
<td>AM LOST</td>
<td>AM-LOST</td>
<td>Position unknown</td>
<td>MARK-1</td>
<td>MARK-IT</td>
<td>I am in distress</td>
</tr>
<tr>
<td>HIJACK</td>
<td>HI-JACK</td>
<td>I have been hijacked</td>
<td>LAND</td>
<td>LAAND</td>
<td>I request to land at (place name)</td>
</tr>
<tr>
<td>DESCEND</td>
<td>DEE-SEND</td>
<td>I require descend</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. In the second column, syllables to be emphasized are underlined.
3. 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.
4. Circumstances may not always permit, nor make desirable, the use of phrase "HIJACK"
APPENDIX 3

TABLES OF CRUISING LEVELS

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

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

*** Except where, on the basis of regional air navigation agreements, from 267 to 269 degrees and from 270 to 059 degrees is prescribed to accommodate predominant traffic directions and appropriate transition procedures to be associated therewith are specified.

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

b) in other areas**

<table>
<thead>
<tr>
<th>TRACK*</th>
<th>From 000 degrees to 179 degrees**</th>
<th>From 180 degrees to 359 degrees**</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>IFR Flights</td>
<td>VFR Flights</td>
</tr>
<tr>
<td></td>
<td>Meters</td>
<td>Feet</td>
</tr>
<tr>
<td>90</td>
<td>3350</td>
<td>11,000</td>
</tr>
<tr>
<td>130</td>
<td>3900</td>
<td>12,800</td>
</tr>
<tr>
<td>150</td>
<td>4550</td>
<td>14,950</td>
</tr>
<tr>
<td>170</td>
<td>5200</td>
<td>17,000</td>
</tr>
<tr>
<td>190</td>
<td>5850</td>
<td>19,000</td>
</tr>
<tr>
<td>210</td>
<td>6400</td>
<td>21,000</td>
</tr>
<tr>
<td>230</td>
<td>7000</td>
<td>23,000</td>
</tr>
<tr>
<td>250</td>
<td>7600</td>
<td>25,000</td>
</tr>
<tr>
<td>270</td>
<td>8250</td>
<td>27,000</td>
</tr>
<tr>
<td>290</td>
<td>8900</td>
<td>29,000</td>
</tr>
<tr>
<td>310</td>
<td>9600</td>
<td>31,000</td>
</tr>
<tr>
<td>330</td>
<td>10300</td>
<td>33,000</td>
</tr>
<tr>
<td>350</td>
<td>11000</td>
<td>35,000</td>
</tr>
<tr>
<td>370</td>
<td>11700</td>
<td>37,000</td>
</tr>
<tr>
<td>390</td>
<td>12400</td>
<td>39,000</td>
</tr>
<tr>
<td>410</td>
<td>13100</td>
<td>41,000</td>
</tr>
<tr>
<td>430</td>
<td>13800</td>
<td>43,000</td>
</tr>
<tr>
<td>450</td>
<td>14500</td>
<td>45,000</td>
</tr>
<tr>
<td>470</td>
<td>15200</td>
<td>47,000</td>
</tr>
</tbody>
</table>

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

** Except where, on the basis of regional air navigation agreements, from 090 to 269 degrees and from 270 to 059 degrees is prescribed to accommodate predominant traffic directions and appropriate transition procedures to be associated therewith are specified.

Note: Guidance material relating to vertical separation is contained in the Manual on Implementation of a 300 m (1 000 ft) Vertical Separation Minimum Between FL 290 and FL 410 Inclusive (Doc 9374).
APPENDIX 4
UNMANNED FREE BALLOONS
(See Chapter 3, 3.1.9 of this Part)

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.

   Note1: 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 centimetres of its smallest surface.

   Note2: 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, which 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.

   2.4 An unmanned free balloon shall be operated in accordance to conditions specified by the Sudan CAA 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 (60000 ft) pressure altitude at which:
   a) there are clouds or obscuring phenomena of more than four oktas 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 (1000 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 telecommand, that operate independently of each other;

   **Figure 4.1 Classification of unmanned balloons**

   ![Figure 4.1 Classification of unmanned balloons](image)

   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: Superpressure 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 superpressure 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 superpressure 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 in an area where ground-based SSR equipment is in use, unless it is equipped with a secondary surveillance radar transponder, with altitude reporting capability, which is continuously operating on an assigned code, 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 15 m intervals.

3.6 A heavy unmanned free balloon shall not be operated below 18000 m (60000 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 15 m 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**
5.1 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 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 18000 m (60000 ft) pressure altitude or to reach cruising level if at or below 18000 m (60000 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 18 000 m (60 000 ft) pressure altitude will be passed, or the estimated time at which the cruising level will be reached if at
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 (60000 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 Operator of a heavy unmanned free balloon operating above 18000 m (60000 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 18000 m (60000 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.
ATTACHMENT A
INTERCEPTION OF CIVIL AIRCRAFT

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

1. The State aircraft, when intercepting civil aircraft shall have at most regard to the safety of navigation of civil aircraft and their occupants. Interception of civil aircraft shall only be referred to warn civil aircraft from entering a restricted area, or to guide it away from such area.

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 ICAO 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 ICAO 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 over-all systems accuracy of the navigation systems to be used by civil aircraft and their ability to remain clear of the delineated areas;
   d) 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 co-ordinated actions by the pilots and ground units concerned and:
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 Part;

b) operators or pilots-in-command of civil aircraft implement the provisions in Part 3, Sub 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 shall be made fully aware of the actions to be taken by them in accordance with the provisions of SUCAR Part 11, Chapter 2 and the PANS-ATM (Doc 4444);

d) all pilots-in-command of intercepting aircraft shall be made aware of the general performance

e) 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;

f) 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;

g) intercept control units and intercepting aircraft shall 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;

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 identification 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 (20NM) 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, 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:

5.1 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.

5.2 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.

5.3 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 Part. 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. Radio-communication 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:* “every State aircraft 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. **Co-ordination between intercept control units and air traffic services units**

It is essential that close co-ordination 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

<table>
<thead>
<tr>
<th>Phrase</th>
<th>Pronunciation¹</th>
<th>Meaning</th>
<th>Phrase</th>
<th>Pronunciation¹</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>CALL SIGN</td>
<td>KAL SAIN</td>
<td>What is your call sign</td>
<td>CALL SIGN</td>
<td>KAL SAIN</td>
<td>My call sign is (call sign)</td>
</tr>
<tr>
<td></td>
<td>(call sign)²</td>
<td></td>
<td></td>
<td>(call sign)²</td>
<td></td>
</tr>
<tr>
<td>FOLLOW</td>
<td>FOL-ÖO</td>
<td>Follow me</td>
<td>WILCO</td>
<td>WIL-NO</td>
<td>Understood</td>
</tr>
<tr>
<td>DESCEND</td>
<td>DEE-SEND</td>
<td>Descent for landing</td>
<td>WILL COMPLY</td>
<td></td>
<td></td>
</tr>
<tr>
<td>YOU LAND</td>
<td>YOU LAND</td>
<td>land at this aerodrome</td>
<td>CAN NOT</td>
<td>CAN NOT</td>
<td>Unable to comply</td>
</tr>
<tr>
<td>PROCEED</td>
<td>PRO-SEND</td>
<td>You may proceed</td>
<td>REPEAT</td>
<td>REPEAT</td>
<td>Repeat your instruction</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>AM LOST</td>
<td>AM LOST</td>
<td>Position unknown</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>MAYDAY</td>
<td>MAYDAY</td>
<td>I am in distress</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>HIJACK²</td>
<td>HI JAC</td>
<td>Have been hijacked</td>
</tr>
<tr>
<td>LAND</td>
<td>LAAND</td>
<td>1 request to land at (place name)</td>
<td>DESCEND</td>
<td>DEE-SEND</td>
<td>I require descend</td>
</tr>
<tr>
<td>(place name)</td>
<td>(place name)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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 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 Unless considerations aboard the aircraft dictate otherwise, the pilot in command should attempt to continue flying on the assigned track and at the assigned cruising level at least until able to notify an ATS unit or within radar coverage.

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

   a) attempt to broadcast warnings on the VHF emergency frequency and other appropriate frequencies, unless considerations aboard the aircraft dictate otherwise. Other equipment such as on-board transponders and data links should also be used when it is advantageous to do so and circumstances permit; and

   b) proceed in accordance with applicable special procedures for in-flight contingencies, where such procedures have been established and promulgated in the Regional Supplementary Procedures (Doc 7030); or

   c) if no applicable regional procedures have been established, proceed at a level which differs from the cruising levels normally used for IFR flight by:

      1) 150 m (500 ft) in an area where a vertical separation minimum of 300 m (1000 ft) is applied; or

      2) 300 m (1000 ft) in an area where a vertical separation minimum of 600 m (2000 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 Part.

-END-