Republic of South Sudan

Laws of South Sudan

CIVIL AVIATION AUTHORITY

AERONAUTICAL CHARTS REGULATIONS, 2026

CIVIL AVIATION AUTHORITY AERONAUTICAL CHARTS REGULATIONS, 2026

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CIVIL AVIATION AUTHORITY AERONAUTICAL CHARTS REGULATIONS, 2026

In exercise of powers conferred upon me under Section 99(2) (e) of the Civil Aviation Act, 2012 as amended, I hereby issue the following Regulations:

CHAPTER I
PRELIMINARY PROVISIONS

1. Title and Commencement

These Regulations may be cited as the **"Aeronautical Charts Regulations, 2026"** and shall come into force on the date of its signature by the Minister.

2. purpose

The purpose of this regulation is to provide for a legal framework to govern the Aeronautical Charts in South Sudan.

3. Authority and Application

(1) This regulation is drafted in accordance with the provisions of section 99 sub-section (2) paragraph (d) of the South Sudan Civil Aviation Authority Act, 2012 as amended.

(2) These Regulations shall apply to a person providing an aeronautical charts service within designated airspaces and at aerodromes for civil aviation purposes.

4. Interpretation

In these Regulations unless the context otherwise requires

"Aerodrome" means a defined area on land or water (including any buildings, installations and equipment) intended to be used either wholly or in part for the arrival, departure and surface movement of aircraft;

"Aerodrome Elevation" means the elevation of the highest point of the landing area;

"Aerodrome Operating Minima" means the limits of usability of an aerodrome for:

(a) take-off, expressed in terms of runway visual range and/or visibility and, if necessary, cloud conditions;

(b) landing in precision approach and landing operations, expressed in terms of visibility and/or runway visual range and decision altitude/height (DA/H) as appropriate to the category of the operation;

(c) landing in approach and landing operations with vertical guidance, expressed in terms of visibility

and/or runway visual range and decision altitude/height (DA/H); and

(d) landing in non-precision approach and landing operations, expressed in terms of visibility and/or runway visual range, minimum descent altitude/height (MDA/H) and, if necessary, cloud conditions;

"Aerodrome Reference Point" means the designated geographical location of an aerodrome;

"Aeronautical Chart" means a representation of a portion of the Earth, its culture and relief, specifically designated to meet the requirements of air navigation;

"Aircraft Stand" means a designated area on an apron intended to be used for parking an aircraft;

"Air Defense Identification Zone" means special designated airspace of defined dimensions within which aircraft are required to comply with special identification and/or reporting procedures additional to those related to the provision of air traffic services (ATS);

"Air Traffic Service" means a generic term meaning variously, flight information service, alerting service, air traffic advisory service, air traffic control service (area control service, approach control service or aerodrome control service);

"Air Transit Route" means a defined route for the air transiting of helicopters;

"Airway" means a control area or portion thereof established in the form of a corridor;

"Altitude" means the vertical distance of a level, a point or an object considered as a point, measured from mean sea level (MSL);

"Application" means manipulation and processing of data in support of user requirements (ISO 19104*);

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

"Area Minimum Altitude (AMA)" means the minimum altitude to be used under instrument meteorological conditions (IMC), which provides a minimum obstacle clearance within a specified area, normally formed by parallels and meridians;

"Area Navigation (RNAV)" means a method of navigation which permits aircraft operation on any desired flight path within the coverage of

ground- or space-based navigation aids or within the limits of the capability of self-contained aids, or a combination of these;

"Arrival Routes" means routes identified in an instrument approach procedure by which aircraft may proceed from the en-route phase of flight to an initial approach fix;

"ATS Route" means a specified route designed for channeling the flow of traffic as necessary for the provision of air traffic services;

"ATS Surveillance System" means a generic term meaning variously, ADS-B, PSR, SSR or any comparable ground-based system that enables the identification of aircraft;

"Bare Earth" means surface of the Earth including bodies of water and permanent ice and snow, and excluding vegetation and man-made objects;

"Calendar" means discrete temporal reference system that provides the basis for defining temporal position to a resolution of one day (ISO 19108*);

"Canopy" means bare Earth supplemented by vegetation height.

"Change-Over Point" means 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;

"Clearway" means a defined rectangular area on the ground or water under the control of the appropriate authority selected or prepared as a suitable area over which an aero plane may make a portion of its initial climb to a specified height.

"Contour Line" means a line on a map or chart connecting points of equal elevation.

"Culture" means all man-made features constructed on the surface of the Earth, such as cities, railways and canals;

"Cyclic Redundancy Check (CRC)" means a mathematical algorithm applied to the digital expression of data that provides a level of assurance against loss or alteration of data;

"DME" means Distance Measurement Equipment

"Danger Area" means an airspace of defined dimensions within which activities dangerous to the flight of aircraft may exist at specified times;

"Data Product Specification" means detailed description of a data set or data set series together with additional information that will enable it to be created, supplied to and used by another party (ISO 19131*);

"Data Quality" means a degree or level of confidence that the data provided meet the requirements of the data user in terms of accuracy, resolution, integrity (or equivalent assurance level), traceability, timeliness, completeness and format;

"Data Resolution" means a number of units or digits to which a measured or calculated value is expressed and used;

"Data Set" means identifiable collection of data (ISO 19101*);

"Data Set Series" means collection of data sets sharing the same product specification (ISO 19115*);

"Datum" means any quantity or set of quantities that may serve as a reference or basis for the calculation of other quantities (ISO 19104*);

"Digital Elevation Model (DEM)" means the representation of terrain surface by continuous elevation values at all intersections of a defined grid, referenced to common datum;

"Displaced Threshold" means a threshold not located at the extremity of a runway;

"Electronic Aeronautical Chart Display" means an electronic device by which flight crews are enabled to execute, in a convenient and timely manner, route planning, route monitoring and navigation by displaying required information;

"Elevation" means the vertical distance of a point or a level, on or affixed to the surface of the earth, measured from mean sea level;

"Ellipsoid Height (Geodetic Height)" means the height related to the reference ellipsoid, measured along the ellipsoidal outer normal through the point in question;

"Feature" means abstraction of real world phenomena (ISO 19101*);

"Feature Attribute" means characteristic of a feature (ISO 19101*);

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

(1) at the end of the last procedure turn, base turn or inbound turn of a racetrack procedure, if specified; or

(2) at the point of interception of the last track specified in the approach procedure; and

(3) ends at a point in the vicinity of an aerodrome from which:
(a) a landing can be made; or
(b) a missed approach procedure is initiated;

"Final Approach and Take-Off Area (FATO)" means a defined area over which the final phase of the approach manoeuvre to hover or landing is completed and from which the take-off manoeuvre is commenced. Where the FATO is to be used by performance Class 1 helicopters, the defined area includes the rejected take-off area available;

"Final Approach Fix or Point" means that fix or point of an instrument approach procedure where the final approach segment commences;

"Final Approach Segment" means that segment of an instrument approach procedure in which alignment and descent for landing are accomplished;

"Flight Information Region" means an airspace of defined dimensions within which flight information service and alerting service are provided;

"Flight Level" means 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;

"Geodesic Distance" means the shortest distance between any two points on a mathematically defined ellipsoidal surface;

"Geodetic Datum" means a minimum set of parameters required to define location and orientation of the local reference system with respect to the global reference system/frame;

"Geoid" means the equipotential surface in the gravity field of the Earth which coincides with the undisturbed mean sea level (MSL) extended continuously through the continents;

"Geoid Undulation" means the distance of the geoid above (positive) or below (negative) the mathematical reference ellipsoid;

"Glide Path" means a descent profile determined for vertical guidance during a final approach;

"Gregorian Calendar" means calendar in general use; first introduced in 1582 to define a year that more closely approximates the tropical year than the Julian calendar (ISO 19108*);

"Height" means the vertical distance of a level, point or an object considered as a point, measured from a specific datum;

"Helicopter Stand" means an aircraft stand which provides for parking a helicopter and where ground taxi operations are completed

or where the helicopter touches down and lifts off for air taxi operations;

"Heliport" means an aerodrome or a defined area on a structure intended to be used wholly or in part for the arrival, departure and surface movement of helicopters;

"Heliport Reference Point (HRP)" means a designated location of a heliport or a landing location.

"Holding Procedure" means a predetermined manoeuvre which keeps an aircraft within a specified airspace while awaiting further clearance;

"Hot Spot" means a location on an aerodrome movement area with a history or potential risk of collision or runway incursion, and where heightened attention by pilots/drivers is necessary;

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

"Hypsometric Tints" means a succession of shades or colour gradations used to depict ranges of elevation;

"Initial Approach Segment" means that segment of an instrument approach procedure between the initial approach fix and the intermediate approach fix or, where applicable, the final approach fixes or point;

"Instrument Approach Procedure" means 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;

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

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

(2) essential data: there is a very low probability when using corrupted essential data that the continued safe

flight and landing of an aircraft would be severely at risk with the potential for catastrophe;

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

"Intermediate Approach Segment" means that segment of an instrument approach procedure between either the intermediate approach fix and the final approach fix or point, or between the end of a reversal, racetrack or dead reckoning track procedure and the final approach fix or point, as appropriate;

"Intermediate Holding Position" means a designated position intended for traffic control at which taxiing aircraft and vehicles shall stop and hold until further cleared to proceed, when so instructed by the aerodrome control tower;

"Isogonal" means a line on a map or chart on which all points have the same magnetic variation for a specified epoch;

"Isogriv" means a line on a map or chart which joins points of equal angular difference between the North of the navigation grid and Magnetic North;

"Landing Area" means that part of a movement area intended for the landing or take-off of aircraft;

"Landing Direction Indicator" means a device to indicate visually the direction currently designated for landing and for take-off;

"Level" means a generic term relating to the vertical position of an aircraft in flight and meaning variously, height, altitude or flight level;

"Logon Address" means a specified code used for data link logon to an ATS unit;

"Magnetic Variation" means the angular difference between True North and Magnetic North;

"Maneuvering Area" means that part of an aerodrome to be used for the take-off, landing and taxiing of aircraft, excluding aprons;

"Marking" means a symbol or group of symbols displayed on the surface of the movement area in order to convey aeronautical information.

"Metadata" means data about data (ISO 19115*);

"Minimum Enroute Altitude (MEA)" means the altitude for an en-route segment that provides adequate reception of relevant navigation facilities

and ATS communications, complies with the airspace structure and provides the required obstacle clearance;

"Minimum Obstacle Clearance Altitude (MOCA)" means the minimum altitude for a defined segment of flight that provides the required obstacle clearance;

"Minimum Sector Altitude (MSA)" means the lowest altitude which may be used which will provide a minimum clearance of 300 m (1 000 ft) above all objects located in an area contained within a sector of a circle of 46 km (25 NM) radius centered on significant point, the aerodrome reference point (ARP), or the heliport reference point (HRP);

"Missed Approach Point (MAPt)" means that point in an instrument approach procedure at or before which the prescribed missed approach procedure must be initiated in order to ensure that the minimum obstacle clearance is not infringed;

"Missed Approach Procedure" means the procedure to be followed if the approach cannot be continued;

"Movement Area" means 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);

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

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

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

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

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

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

(3) stand outside those defined surfaces and that have been assessed as being a hazard to air navigation;

"Obstacle Clearance Altitude *(OCA)* or Obstacle Clearance Height (OCH)" means the lowest altitude or the lowest height above the elevation of the relevant runway threshold or the aerodrome elevation as applicable, used in establishing compliance with appropriate obstacle clearance criteria;

"Obstacle Free Zone (OFZ)" means the airspace above the inner approach surface, inner transitional surfaces, and balked landing surface and that portion of the strip bounded by these surfaces, which is not penetrated by any fixed obstacle other than a low-mass and frangible mounted one required for air navigation purposes;

"Orthometric Height" means height of a point related to the geoid, generally presented as an MSL elevation;

"Performance-Based Navigation (PBN)" means area navigation based on performance requirements for aircraft operating along an ATS route, on an instrument approach procedure or in a designated airspace;

"Point Light" means a luminous signal appearing without perceptible length;

"Portrayal" means presentation of information to humans (ISO 19116*);

"Position (Geographical)" means set of coordinates (latitude and longitude) referenced to the mathematical reference ellipsoid which define the position of a point on the surface of the Earth;

"Precision Approach Procedure" means an instrument approach procedure utilizing azimuth and glide path information provided by ILS or PAR;

"Procedure Altitude or Height" means a published altitude/height used in defining the vertical profile of a flight procedure, at or above the minimum obstacle clearance altitude/height where established.

"Procedure Turn" means manoeuvre in which a turn is made away from a designated track followed by a turn in the opposite direction to permit the aircraft to intercept and proceed along the reciprocal of the designated track;

"Prohibited Area" means an airspace of defined dimensions, above the land areas or territorial waters of a State, within which the flight of aircraft is prohibited;

"Relief" means the inequalities in elevation of the surface of the Earth represented on aeronautical charts by contours, hypsometric tints, shading or spot elevations;

"Reporting Point" means a specified (named) geographical location in relation to which the position of an aircraft can be reported;

"Resolution" means a number of units or digits to which a measured or calculated value is expressed and used;

"Restricted Area" means 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;

"Reversal Procedure" means a procedure designed to enable aircraft to reverse direction during the initial approach segment of an instrument approach procedure. The sequence may include procedure turns or base turns;

"Runway" means a defined rectangular area on a land aerodrome prepared for the landing and take-off of aircraft;

"Runway-Holding Position" means 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;

"Runway Strip" means a defined area including the runway and stop-way, if provided, intended:

(1) to reduce the risk of damage to aircraft running off a runway; and

(2) to protect aircraft flying over it during take-off or landing operations;

"Runway Visual Range (RVR)" means the range over which the pilot of an aircraft on the centre line of a runway can see the runway surface markings or the lights delineating the runway or identifying its center line;

"Shoulder" means an area adjacent to the edge of a pavement so prepared as to provide a transition between the pavement and the adjacent surface;

"Significant Point" means a specified geographical location used in defining an ATS route or the flight path of an aircraft and for other navigation and ATS purposes;

"Stopway" means a defined rectangular area on the ground at the end of take-off run available prepared as a suitable area in which

an aircraft can be stopped in the case of an abandoned take-off;

"Taxiing" means movement of an aircraft on the surface of an aerodrome under its own power, excluding take-off and landing;

"Taxi-Route" means a defined path established for the movement of helicopters from one part of a heliport to another. A taxi-route includes a helicopter air or ground taxiway which is centered on the taxi-route;

"Taxiway" means 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:

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

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

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

"Terminal Arrival Altitude (TAA)" means the lowest altitude that will provide a minimum clearance of 300 m (1 000 ft) above all objects located in an arc of a circle defined by a 46 km (25 NM) radius centered on the Initial Approach Fix (IAF), or where there is no IAF on the Intermediate approach Fix (IF), delimited by straight lines joining the extremity of the arc to the IF. The combined TAAs associated with an approach procedure shall account for an area of 360 degrees around the IF;

"Terrain" means the surface of the Earth containing naturally occurring features such as mountains, hills, ridges, valleys, bodies of water, permanent ice and snow, and excluding obstacles;

"Threshold" means the beginning of that portion of the runway usable for landing;

"Touchdown and Lift-Off Area (TLOF)" means a load bearing area on which a helicopter may touch down or lift off;

"Touchdown Zone" means the portion of a runway, beyond the threshold, where it is intended landing aero-planes first contact the runway;

"**Track**" means 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);

"Transition Altitude" means the altitude at or below which the vertical position of an aircraft is controlled by reference to altitudes;

"Vectoring" means provision of navigational guidance to aircraft in the form of specific headings, based on the use of an ATS surveillance system;

"Visual Approach Procedure" means a series of predetermined manoeuvres by visual reference, 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, a go-around procedure can be carried out;

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

(1) Fly-by waypoint. A waypoint which requires turn anticipation to allow tangential interception Omnidirectional of the next segment of a route or procedure; or

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

"*VOR*" means VHF Radio Range Application

"Availability" means aeronautical charts service provider shall:

(a) on the request of another State provide all information relating to its area of jurisdiction;

(b) ensure the availability of charts including specified electronic charts in whichever of the following ways as provided in these regulations and is appropriate for a particular chart or single sheet of a chart series;

(c) for any chart or single sheet of a chart series entirely contained within the territory of the (state) either:

(i) arrange for the production of the chart or sheet by another State or by an agency; or

(ii) produce the chart or sheet itself; or

(iii) provide another State prepared to accept an obligation to produce the chart or sheet with the data necessary for its production.

(d) for any chart or single sheet of a chart series which includes the territory of two or more Contracting States, in consultation with the States having jurisdiction over the territory so included determine the manner in which the chart or sheet will be made available.

(e) take all reasonable measures to ensure that the information provided and the aeronautical charts made available are adequate and accurate and that aeronautical charts are maintained up to date by an adequate revision service

CHAPTER II
GENERAL SPECIFICATIONS

5. General Requirements

(1) A person shall not provide an aeronautical charts service unless such organization has been certificated to do so by the Authority in accordance with the South Sudan Civil Aviation (Certification of Air Navigation Service Providers) Regulations.

(2) A person providing aeronautical charts services shall develop and avail aeronautical charts to the search and rescue coordinating agency in the designated airspaces as specified by the Authority.

6. Operational Requirements for Charts

The aeronautical charts service provider shall ensure;

(1) Each type of chart provides information relevant to the function of the chart and the design of the chart observes Human Factors principles to facilitate its optimum use;

(2) Each type of chart provides information appropriate to the phase of flight for the safe and expeditious operation of the aircraft; the phase of flight are listed below-

(a) Phase 1 - Taxi from aircraft stand to take off
(b) Phase 2 - Take off and climb to en-route ATS route structure
(c) Phase 3 – En-route ATS route structure
(d) Phase 4 - Descent to approach
(e) Phase 5 - Approach to land and missed approach
(f) Phase 6 - Landing and taxi to aircraft stand.

(3) The presentation of information is accurate, free from distortion and clutter, unambiguous, and readable under all normal operating conditions;

(4) The colors or tints and type size used are such that the chart can be easily read and interpreted by the pilot in varying conditions of natural and artificial light.

(5) The information is in a form which enables the pilot to acquire it in a reasonable time consistent with workload and operating conditions.

(6) The presentation of information provided on each type of chart permits smooth transition from chart to chart as appropriate to the phase of flight.

(7) The charts shall be True North orientated.

(8) The basic sheet size of the charts shall be 210 × 297 mm (8.27 x 11.69 inches) (A4).

7. Titles

The title of a chart or chart series prepared in accordance with these regulations and intended to satisfy the function of the chart shall be that of the relevant part heading as modified by application of any regulation contained herein, except that such title shall not include "ICAO" unless the chart conforms with all requirements specified in these regulations and any specified for the particular chart.

8. Miscellaneous Information

The aeronautical charts service provider shall:

(1) Ensure that the marginal note layout is as given in first schedule, except as otherwise specified for a particular chart.

(2) Show the following information on the face of each chart unless otherwise stated in the specification of the chart concerned:

(a) designation or title of the chart series;
(b) name and reference of the sheet;
(c) on each margin an indication of the adjoining sheet where applicable.

(3) Provide a legend to the symbols and abbreviations used and, on the face, or reverse of each chart except that, where it is impracticable for reasons of space, a legend may be published separately; and

(4) Show the name and adequate address of the producing agency in the margin of the chart except that, where the chart is published as part of an aeronautical document, this information may be placed in the front of that document.

9. Symbols

The aeronautical charts service provider shall:

(1) Use symbols conforming to those specified in second schedule - ICAO Chart Symbols, except that where it is desired to show on an aeronautical chart special features or items of importance to civil aviation for which no ICAO symbol is at present provided, any appropriate symbol may be chosen for this purpose, provided that it does not cause confusion with any existing ICAO chart symbol or impair the legibility of the chart;

(2) Use the same basic symbol on all charts on which it appears, regardless of chart purpose to represent ground-based navigation aids, intersections and waypoints;

(3) Use the symbol for significant points is based on a hierarchy of symbols and selected in the following order:

(a) ground-based navigation aid;
(b) intersection;
(c) waypoint symbol;

(4) Use a waypoint symbol only when a particular significant point does not already exist as either a ground-based navigation aid or intersection; and

(5) Show symbols in the manner specified in sub-section (2), (3) and (4) and second schedule - ICAO Chart Symbols, symbol number 121.

10. Units of Measurement

The aeronautical charts service provider shall:

(1) Derive distances as geodesic distances;

(2) Express distances in either kilometers or nautical miles or both, differentiate clearly the provided the units;

(3) Express altitudes, elevations and heights in either meters or feet or both, differentiate clearly the provided the units;

(4) Express linear dimensions on aerodromes and short distances in meters;

(5) Ensure that the order of resolution of distances, dimensions, elevations and heights are as specified for a particular chart;

(6) State conspicuously on the face of each chart the units of measurement used to express distances, altitudes, elevations and heights; and

(7) Provide conversion scales on each chart on which distances, elevations or altitudes are shown and place conversion scales on the face of each chart.

11. Scale and Projection

The aeronautical charts service provider shall:

(1) Indicate the name and basic parameters and scale of the projection for charts of large areas; and

(2) For charts of small areas, indicate a linear scale only.

12. Date of Validity of Aeronautical Information

The aeronautical charts service provider shall clearly indicate on the face of each chart the date of validity of aeronautical information.

13. Spelling of Geographical Names

The aeronautical charts service provider shall:

(1) Use the symbols of the Roman alphabet for all writing;

(2) Spell out in full the language used by the publishing agency in respect of the most important example of each type, the word where a geographical term such as "cape", "point", "gulf", "river", is abbreviated on any particular chart; and

(3) Not use the punctuation marks in abbreviations within the body of a chart.

14. Abbreviations

The aeronautical charts service provider shall ensure that abbreviations are:

(1) Used on aeronautical charts whenever they are appropriate; and

(2) Selected from the Procedures for Air Navigation Services - ICAO Abbreviations and Codes (Doc 8400) where applicable.

15. Political Boundaries

The aeronautical charts service provider shall:

(1) Show international boundaries, but may be interrupted if data more important to the use of the chart would be obscured; and

(2) Indicate names identifying the countries where the territory of more than one State appears on a chart.

16. Colours

The aeronautical charts service provider shall use the colours on charts conform to the Colour Guide in third Schedule of these regulations.

17. Relief

The aeronautical charts service provider shall:

(1) Portray relief, where shown, in a manner that will satisfy the chart users' need for:

(a) orientation and identification;
(b) safe terrain clearance;
(c) clarity of aeronautical information when shown;
(d) planning.

(2) Use the tints where relief is shown by hypsometric tints, are based on those shown in the Hypsometric Tint Guide in fourth Schedule of the Regulation;

(3) Show the spot elevations for selected critical points where spot elevations are used; and

(4) Follow the value of spot elevations of doubtful accuracy by the sign ±.

18. Prohibited, Restricted and Danger Areas

The aeronautical charts service provider shall include the reference or other identification when prohibited, restricted or danger areas are shown, except that the nationality letters may be omitted.

19. Air Traffic Services Airspaces

The aeronautical charts service provider shall indicate the class of airspace, the type, name or call sign, the vertical limits and the radio frequency to be used when ATS airspace is shown on a chart, and depict the horizontal limits in accordance to specifications in the second schedule of these Regulations.

20. Magnetic Variation

The aeronautical charts service provider shall:

(1) Indicate the True North and magnetic variation and the order of resolution of magnetic variation is that as specified for a particular chart;

(2) Ensure that when magnetic variation is shown on a chart, the values shown are those for the year nearest to the date of publication that is divisible by 5; and

(3) Quote an interim date and value in exceptional cases where the current value would be more than one degree different, after applying the calculation for annual change.

21. Aeronautical Data

The aeronautical charts service provider shall:

(1) Take all necessary measures to introduce a properly organized quality system containing procedures, processes and resources necessary to implement quality management at each function stage.

(2) Make the execution of such quality management demonstrable for each function stage, when required;

(3) Ensure that the established procedures exist in order that aeronautical data at any moment is traceable to its origin so to allow any data anomalies or errors, detected during the production and maintenance phases or in the operational use, to be corrected;

(4) Ensure that the chart resolution of aeronautical data is as specified for a particular chart;

(5) Ensure that the integrity of aeronautical data is maintained throughout the data process from survey or origin to the next intended user;

(6) Use digital data error detection techniques during the transmission and/or storage of aeronautical data and digital data sets.

22. Horizontal Reference System

The aeronautical charts service provider shall:

(1) Use World Geodetic System — 1984 as the horizontal reference system;

(2) Express published aeronautical geographical coordinates indicating latitude and longitude in terms of the WGS-84 geodetic reference datum;

(3) Ensure that geographical coordinates which have been transformed into WGS-84 coordinates, but whose accuracy of original field work does not meet the

requirements in the Civil Aviation (Air Traffic Services) Regulations and the Civil Aviation (Aerodrome) Regulations, are identified by an asterisk; and

(4) Ensure that the chart resolution of geographical coordinates is that specified for a particular chart series chart series.

23. Vertical Reference System

The aeronautical charts service provider shall:

(1) Use mean sea level datum as the vertical reference system;

(2) Publish as specified for a particular chart, the elevations referenced to mean sea level, for the specific surveyed ground positions, geoid undulation for the surveyed positions; and

(3) Ensure that the chart resolution of elevation and geoid undulation is that specified for a particular chart series.

24. Temporal Reference System

The aeronautical charts service provider shall:

(1) Use the Gregorian calendar and Coordinated Universal Time (UTC) as the temporal reference system; and

(2) Ensure that when a different temporal reference system is used for charting, this is indicated in GEN 2.1.2 of the Aeronautical Information Publication (AIP).

CHAPTER III
AERODROME OBSTACLE CHART - ICAO TYPE A

25. Function

The aeronautical charts service provider shall ensure that the Aerodrome Obstacle chart – ICAO Type A, in combination with the relevant information published in the AIP, provides the data necessary to enable an operator to comply with the operating limitations of the Civil Aviation (Operations of Aircraft) Regulations.

26. Availability

The aeronautical charts service provider shall:

(1) Make the Aerodrome Obstacle Chart — ICAO Type A available in the manner specified for all aerodromes regularly used by international civil aviation, except for those aerodromes where there are no obstacles in the take-off flight path areas or where the Aerodrome Terrain and Obstacle Chart — ICAO (Electronic) is provided in accordance with provisions of this regulations.

(2) Publish a notification in the AIP where a chart is not required because no obstacles exist in the take-off flight path area.

27. Units of Measurement

The aeronautical charts service provider shall show the:

(1) Elevations to the nearest half-meter or to the nearest foot; and

(2) Linear dimensions to the nearest half-meter.

28. Coverage and Scale

The aeronautical charts service provider shall ensure that the:

(1) Extent or coverage of each chart is sufficient to cover all obstacles;

(2) Horizontal scale is within the range of 1:10 000 to 1:15 000;

(3) Vertical scale is ten times the horizontal scale; and

(4) Horizontal and vertical linear scales showing both meters and feet are included in the charts.

29. Format

The aeronautical charts service provider shall ensure that the:

(1) Charts depict a plan and profile of each runway, any associated stop way or clearway, the take-off flight path area and obstacles;

(2) Profile for each runway, stop way, clearway and the obstacles in the take-off flight path area are shown above its corresponding plan;

(3) Profile of an alternative take-off flight path area comprises a linear projection of the full take-off flight path and is disposed above its corresponding plan in the manner most suited to the ready interpretation of the information;

(4) Profile grid is ruled over the entire profile area exclusive of the runway;

(5) Zero for vertical coordinates is mean sea level;

(6) Zero for horizontal coordinates is at the end of the runway furthest from the take-off flight path area concerned;

(7) Graduation marks indicating the sub-divisions of intervals is shown along the base of the grid and along the vertical margins;

(8) Vertical grid has intervals of 30 m (100 ft) and the horizontal grid has intervals of 300 m (1 000 ft); and

(9) Chart includes:

(a) a box for recording the operational data specified in section 34

(b) a box for recording amendments and dates thereof.

30. Identification

The aeronautical charts service provider shall ensure that the chart is identified by the name of the country in which the aerodrome is located, the name of the city or town or area which the aerodrome serves, the name of the aerodrome and the designator of the runway.

31. Magnetic Variation

The aeronautical charts service provider shall ensure that the magnetic variation to the nearest degree and date of information is indicated.

32. Obstacles

The aeronautical charts service provider shall:

(1) Regard objects in the take-off flight path area which project above a plane surface having a 1.2 per cent slope and having a common origin with the take-off flight path area as obstacles, except that obstacle lying wholly below the shadow of other obstacles as defined in this regulation need not be shown;

(2) Consider mobile objects such as boats, trains and trucks, which may project above the 1.2 per cent plane as obstacles, but shall not be considered as being capable of creating a shadow;

(3) Consider the shadow of an obstacle to be a plane surface originating at a horizontal line passing through the top of the obstacle at right angles to the center line of the take-off flight path area. The plane covers the complete width of the take-off flight path area and extends to the plane defined in sub-section (1) or to the next higher obstacle if it occurs first. For the first 300 m (1 000 ft) of the take-off flight path area, the shadow planes are horizontal and beyond this point such planes have an upward slope of 1.2 per cent; and

(4) If the obstacle creating a shadow is likely to be removed, show objects that would become obstacles by its removal.

33. Take-Off Flight Path Area

The take-off flight path area shall consist of a quadrilateral area on the surface of the earth lying directly below, and symmetrically disposed about the take-off flight path and shall have the following characteristics:

(1) Commences at the end of the area declared suitable for take-off;

(2) The width at the point of origin is 180 m (600 ft) and this width increases at the rate of 0.25D to a maximum of 1 800 m (6 000 ft), where D is the distance from the point of origin;

(3) Extends to the point beyond which no obstacles exist or to a distance of 10.0 km (5.4 NM), whichever is the lesser; and

(4) For runways serving aircraft having operating limitations which do not preclude the use of a take-off flight path gradient of less than 1.2 per cent, the extent of the take-off flight path area defined in sub-section (3) above shall be increased to not less than 12.0 km (6.5 NM) and the slope of the plane surface defined in section 32 (1), (2) and (3) shall be reduced to 1.0 per cent or less.

34. Declared Distances

The aeronautical charts service provider shall:

(1) Provide the following information for each direction of each runway:

(a) take-off run available;
(b) accelerate-stop distance available;
(c) take-off distance available; and
(d) landing distance available; and

(2) Ensure that a runway is identified as "not usable for take-off, landing or both" where a declared distance is not provided because a runway is usable in one direction only.

35. Plan and Profile Views

(1) The aeronautical charts service provider shall ensure that the plan view shows -

(a) The outline of the runways by a solid line, including the length and width, the magnetic bearing to the nearest degree, and the runway number;
(b) The outline of the clearways by a broken line, including the length and identification as such;
(c) Take-off flight path areas by a dashed line and the center line by a fine line consisting of short and long dashes;
(d) Alternative take-off flight path areas and where alternative take-off flight path areas not centered on the extension of the runway center line are shown, notes are provided explaining the significance of such areas;

(2) Obstacles, including:

(a) the exact location of each obstacle together with a symbol indicative of its type;
(b) the elevation and identification of each obstacle;
(c) the limits of penetration of obstacles of large extent in a distinctive manner identified in the legend.

(3) The aeronautical charts service provider shall; -

(a) indicate the nature of the runway and stop way surfaces;
(b) identify stop ways as such and are shown by a broken line;
(c) indicate the length of each stop way, when stop ways are shown.
(d) The aeronautical charts service provider shall ensure that the profile view shows;
(e) the profile of the center line of the runway by a solid line and the profile of the center line of any associated stop ways and clearways by a broken line;
(f) the elevation of the runway center line at each end of the runway, at the stop way and at the origin of each take- off;
(g) obstacles, including:
    (i) each obstacle by a solid vertical line extending from a convenient grid line over at least one other grid line to the elevation of the top of the obstacle;
    (ii) identification of each obstacle;

(h) the limits of penetration of obstacles of large extent in a distinctive manner identified in the legend.

36. Accuracy

The aeronautical charts service provider shall:

(1) show the order of accuracy attained on the chart;

(2) determine the horizontal dimensions and the elevations of the runway, stop way and clearway to be printed on the chart to the nearest 0.5 m (1 ft);

(3) ensure that the order of accuracy of the field work and the precision of chart production are such that measurements in the take-off flight path areas can be taken from the chart within the following maximum deviations:

(a) horizontal distances: 5 m (15 ft) at a point of origin increasing at a rate of 1 per 500;

(b) vertical distances: 0.5 m (1.5 ft) in the first 300 m (1 000ft) and increasing at a rate of 1 per 1 000; and

(4) state and identify as assumed, where no accurate datum for vertical reference is available, the elevation of the datum used.

CHAPTER IV
AERODROME OBSTACLE CHART – ICAO TYPE B

37. Function

The aeronautical charts service provider shall ensure that the Aerodrome Obstacle Chart – Type B provides information to satisfy the following functions:

(1) The determination of minimum safe altitudes/heights including those for circling procedures;

(2) The determination of procedures for use in the event of an emergency during take-off or landing;

(3) The application of obstacle clearing and marking criteria; and

(4) The provision of source material for aeronautical charts.

38. Availability of Aerodrome Obstacle Charts

The aeronautical charts service provider shall:

(1) Make available Aerodrome Obstacle Charts – ICAO Type B, in the manner prescribed for all aerodromes regularly used by international civil aviation except for those aerodromes where the Aerodrome Terrain and Obstacle Chart — ICAO (Electronic) is provided in accordance with part V; and

(2) Call the Aerodrome Obstacle Chart — ICAO Type B, the Aerodrome Obstacle Chart - ICAO (Comprehensive) when a chart combining the specifications of part III and Part IV of this Regulation is made available.

39. Units of Measurement

The aeronautical charts service provider shall:

(1) Show the elevations to the nearest half-meter or to the nearest foot; and

(2) Show linear dimensions to the nearest half-meter.

40. Coverage and Scale

The aeronautical charts service provider shall ensure that:

(1) The extent or coverage of each chart is sufficient to cover all obstacles

(2) The horizontal scale is within the range of 1:10 000 to 1:20 000; and

(3) A horizontal linear scale showing both meters and feet is included in the chart and when necessary, a linear scale for kilometers and a linear scale for nautical miles is also shown.

41. Format

The aeronautical charts service provider shall ensure that the charts include:

(1) Any necessary explanation of the projection used;

(2) Any necessary identification of the grid used;

(3) A notation indicating that obstacles are those which penetrate the surfaces specified in Civil Aviation (Aerodromes) Regulations;

(4) A box for recording amendments and dates thereof; and

(5) Outside the neat line, every minute of latitude and longitude marked in degrees and minutes.

42. Identification

The aeronautical charts service provider shall ensure that the chart is identified by the name of the country in which the aerodrome is located, the name of the city or town or area which the aerodrome serves, and the name of the aerodrome.

43. Culture and Topography

The aeronautical charts service provider shall:

(1) Keep drainage and hydrographic details to a minimum;

(2) Show the buildings and other salient features associated with the aerodrome and wherever possible, to scale;

(3) Show all objects, either cultural or natural, that project above the take-off and approach surfaces specified in regulation 45 or the clearing and marking surfaces specified in Civil Aviation (Aerodrome Design and Operations) Regulations; and

(4) Show roads and railroads within the take-off and approach area, and less than 600 m (2 000 ft) from the end of the runway or runway extensions.

44. Magnetic Variation

The aeronautical charts service provider shall ensure that the chart shows a compass rose orientated to the True North, or a North point, showing the magnetic variation to the nearest degree with the date of magnetic information and annual change.

45. Aeronautical Data

The aeronautical charts service provider shall ensure that the chart shows:

(1) The aerodrome reference point and its geographical coordinates in degrees, minutes and seconds;

(2) The outline of the runways by a solid line;

(3) he length and width of the runway;

(4) The magnetic bearing to the nearest degree of the runway and the runway number;

(5) The elevation of the runway center line at each end of the runway, at the stop way, at the origin of each take-off and approach area, and at each significant change of slope of runway and stop way;

(6) Taxiways, aprons and parking areas identified as such, and the outlines by a solid line;

(7) Stop ways identified as such and depicted by a broken line;

(8) The length of each stop way;

(9) Clearways identified as such and depicted by a broken line;

(10) The length of each clearway;

(11) Take-off and approach surfaces identified as such and depicted by a broken line;

(12) Take-off and approach areas;

(13) Obstacles at their exact location, including:

(a) a symbol indicative of their type;
(b) elevation;
(c) identification;
(d) limits of penetration of large extent in a distinctive manner identified in the legend;

(14) Any additional obstacles, as determined by sub-section 32 (1) and (2) including the obstacles in the shadow of an obstacle, which would otherwise be exempted.

(a) The nature of the runway and stopway surfaces shall be given.
(b) The highest object or obstacle between adjacent approach areas within a radius of 5 000 m (15 000 ft) from the aerodrome reference point shall be indicated in a prominent manner, wherever practicable.

(c) The extent of tree areas and relief features, part of which constitute obstacles, shall be shown.

46. Accuracy

The aeronautical charts service provider shall:

(1) Show the order of accuracy attained on the chart;

(2) Determine horizontal dimensions and the elevations of the movement area, stop ways and clearways to be printed on the chart to the nearest 0.5 m (1 ft);

(3) Ensure that the order of accuracy of the field work and the precision of chart production is such that the resulting data will be within the maximum deviations indicated herein:

(4) Ensure that the take-off and approach areas:

(a) horizontal distances: 5 m (15 ft) at point of origin increasing at a rate of 1 per 500;
(b) vertical distances: 0.5 m (1.5 ft) in the first 300 m (1 000 ft) and increasing at a rate of 1 per 1 000;

(5) Other areas:

(a) horizontal distances: 5 m (15 ft) within 5 000 m (15 000 ft) of the aerodrome reference point and 12 m (40 ft) beyond that area;
(b) vertical distances: 1 m (3 ft) within 1 500 m (5 000 ft) of the aerodrome reference point increasing at a rate of 1 per 1 000;

(6) State and identify as assumed, where no accurate datum for vertical reference is available, the elevation of the datum used.

CHAPTER V
AERODROME TERRAIN AND OBSTACLE CHART – ICAO ELECTRONIC

47. Function

The aeronautical charts service provider shall ensure that the Aerodrome Terrain and Obstacle Chart electronic portrays the terrain and obstacle data in combination with aeronautical data, as appropriate, necessary to:

(1) Enable an operator to comply with the operating limitations of the Civil Aviation (operation of aircraft) Regulations, by developing contingency procedures for use in the event of an emergency during a missed approach or take-off, and by performing aircraft operating limitations analysis; and

(2) Support the following air navigation applications:

(a) instrument procedure design (including circling procedure);
(b) aerodrome obstacle restriction and removal; and
(c) provision of source data for the production of other aeronautical charts.

48. Availability of Aerodrome Terrain and Obstacle Charts

The aeronautical charts service provider shall:

(1) Make available aerodrome Terrain and Obstacle Charts — ICAO (Electronic) in the manner specified in section 3(2) for aerodromes regularly used by international civil aviation;

(2) Make available aerodrome Terrain and Obstacle Chart — ICAO (Electronic) in hard copy format upon request; and

(3) Use ISO 19100 series of standards for geographic information as a general data modelling framework.

49. Identification

The aeronautical charts service provider shall ensure that electronic charts are identified by the name of the country in which the aerodrome is located, the name of the city or town which the aerodrome serves, and the name of the aerodrome.

50. Chart Coverage

The aeronautical charts service provider shall ensure that the extent of each chart is sufficient to cover Area 2 as specified in the Civil Aviation (Aeronautical Information Services) Regulations.

51. General Specifications

The aeronautical charts service provider shall ensure that the:

(1) Relationships between features, feature attributes, and the underlying spatial geometry and associated topological relationships are specified by an application schema when developing computer graphic applications that are used to portray features on the chart;

(2) Portrayed information is provided on the basis of portrayal specifications applied according to defined portrayal rules whereby portrayal specifications and portrayal rules are not part of the data set;

(3) Portrayal rules are stored in a portrayal catalogue which making reference to separately stored portrayal specifications; and

(4) Symbols used to portray features are in accordance with section 9 and the ICAO Chart Symbols in second schedule.

52. Terrain Feature

The aeronautical charts service provider shall:

(1) Ensure that the terrain feature, and associated attributes, to be portrayed and database-linked to the chart are based on the terrain data sets which satisfy the requirements the Civil Aviation (Aeronautical Information Services) Regulations;

(2) Portray the terrain feature in a manner that provides an effective general impression of a terrain which is too be a representation of terrain surface by continuous

elevation values at all intersections of the defined grid, also known as the Digital Elevation Model (DEM);

(3) Provide representation of terrain surface as a selectable layer of contour lines in addition to the Digital Elevation Model;

(4) Use an ortho-rectified image which matches the features on the digital elevation model with features on the overlying image to enhance the digital elevation model and the image shall be provided as a separate selectable layer;

(5) Link the portrayed terrain feature to the following associated attributes in the database(s):

(a) horizontal positions of grid points in geographic coordinates and elevations of the points;
(b) surface type;
(c) contour line values, if provided; and
(d) names of cities, towns and other prominent topographic features.

(6) Link additional terrain attributes provided in the database(s) to the portrayed terrain feature.

53. Obstacle Features

The aeronautical charts service provider shall:

(1) Ensure that the obstacle features, and associated attributes, portrayed or database - linked to the chart is based on obstacle data sets which satisfy the requirements of the Civil Aviation (Aeronautical Information Services) Regulations;

(2) Portray each obstacle by an appropriate symbol and obstacle identifier;

(3) Link the portrayed obstacle feature to the following associated attributes in the database(s):

(a) horizontal position in geographic coordinates and associated elevation;
(b) obstacle type; and
(c) obstacle extent, if appropriate;

(4) Link additional obstacle attributes provided in the database(s) to the portrayed obstacle feature.

54. Aerodrome Features

The aeronautical charts service provider shall:

(1) Ensure that the aerodrome features, and associated attributes, portrayed and database -linked to the chart is used on aerodrome data which satisfy the requirements of the Civil Aviation (Aeronautical Information Services) Regulations;

(2) Portray the following aerodrome features by an appropriate symbol:

(a) aerodrome reference point;

(b) runway(s), with designation numbers, and if available, stop way(s) and clearway(s); and

(c) taxiways, aprons, large buildings and other prominent aerodrome features.

(3) Link portrayed aerodrome feature to the following associated attributes in the database:

(a) geographical coordinates of the aerodrome reference point;
(b) aerodrome magnetic variation, year of information and annual change;
(c) length and width of runway(s), stop way(s) and clearway(s);
(d) type of surface of runway(s) and stop way(s);
(e) magnetic bearings of the runway(s) to the nearest degree;
(f) elevations at each end of runway(s), stop way(s) and clearway(s), and at each significant change in slope of runway(s) and stop way(s);
(g) declared distances for each runway direction, or the abbreviation "NU" where a runway direction cannot be used for take-off or landing or both.

55. Radio Navigation Aid Features

The aeronautical charts service provider shall portray each radio navigation aid feature located within the chart coverage is portrayed by an appropriate symbol.

56. Accuracy and Resolution

The aeronautical charts service provider shall ensure that the:

(1) Order of accuracy of aeronautical, terrain and obstacle data is in accordance with its intended use;

(2) Aeronautical, terrain and obstacle data resolution is commensurate with the actual data accuracy.

57. Electronic Functionality

The aeronautical charts service provider shall ensure that the:

(1) The scale can be varied at which the chart is viewed

(2) Symbols and text size vary with chart scale to enhance readability;

(3) Information on the chart is geo-referenced, and it is possible to determine cursor position to at least the nearest second;

(4) Chart is compatible with widely available desktop computer hardware, software and media;

(5) Chart includes a reader software;

(6) It is not possible to remove information from the chart without an authorized update;

(7) Selectable information layers are provided to allow for the customized combination of information when due to congestion of information, the details necessary to support the function of the chart cannot be shown with sufficient clarity on a single comprehensive chart view; and

(8) Chart can be printed in hard copy format according to the content specifications and scale determined by the user.

58. Chart Data Product Specifications

The aeronautical charts service provider shall ensure that:

(1) A comprehensive statement of the data sets comprising the chart is provided in the form of data product specifications on which basis air navigation users will be able to evaluate the chart data product and determine whether it fulfils the requirements for its intended use;

(2) The chart data product specifications include an overview, a specification scope, a data product identification, data content information, the reference systems used, the data quality requirements, and information on data-on-data capture, data maintenance, data portrayal, data product delivery, as well as any additional information available, and metadata;

(3) The overview of the chart data product specifications provides an informal description of the product and contains the general information about the data product and specification scope of the chart data product specifications contains the spatial extent of the chart coverage;

(4) The chart data product identification includes the title of the product, a brief narrative summary of the content and purpose, and a description of the geographic area covered by the chart;

(5) The data content of the chart data product specifications clearly identifies the type of coverage and imagery and provides a narrative description of each;

(6) The chart data product specifications include information that defines the reference systems used including:

(a) the spatial reference system (horizontal and vertical) and, if appropriate;
(b) temporal reference system.

(7) The chart data product specifications identify the data quality requirements including

(a) a statement on acceptable conformance quality levels, and;
(b) corresponding data quality measures.

(8) Statement in sub-section (7) covers all the data quality elements and data quality sub-elements; even if only to state that a specific data quality element or sub-element is not applicable.

(9) The chart data product specifications include:

(a) a data capture statement which is a general description of the sources and processes applied for the capture of chart data;
(b) The principles and criteria applied in the maintenance of the chart;
(c) the frequency with which the chart product is updated;

(d) the maintenance information of obstacle data sets included on the chart, and;

(e) an indication of the principles, methods and criteria applied for obstacle data maintenance.

(10) Chart data product specifications contain:

(a) information on how data are portrayed on the chart, as detailed in sub-section 51 (1) to (3);

(b) the chart data product delivery information which includes delivery formats and delivery medium information; and

(11) Core chart metadata elements is included in the chart data product specifications and any additional metadata items required to be supplied is stated in the product specifications together with the format and encoding of the metadata.

CHAPTER VI
PRECISION APPROACH TERRAIN CHART — ICAO

59. Function

The aeronautical charts service provider shall ensure that the precision approach terrain chart provides detailed terrain profile information within a defined portion of the final approach so as to enable aircraft operating agencies to assess the effect of the terrain on decision height determination by the use of radio altimeters.

60. Availability of Precision Approach Terrain Chart

The aeronautical charts service provider shall:

(1) Ensure that the Precision Approach Terrain Chart is made available for all precision approach runways Categories II and III at aerodromes used by international civil aviation, except where the requisite information is provided in the Aerodrome Terrain and Obstacle Chart — ICAO (Electronic) in accordance with Chapter V of these regulations;

(2) Revise precision approach terrain chart whenever any significant change occurs.

61. Scale

The aeronautical charts service provider shall ensure that:

(1) The horizontal scale is 1:2500, and the vertical scale 1:500;

(2) When the chart includes a profile of the terrain to a distance greater than 900 m (3 000 ft) from the runway threshold, the horizontal scale is 1:5000.

62. Identification

The aeronautical charts service provider shall ensure that the chart is identified by the name of the country in which the aerodrome is located, the name of the city or town or area which the aerodrome serves, the name of the aerodrome and the designator of the runway.

63. Plan and Profile Information

The aeronautical charts service provider shall:

(1) Ensure that the chart includes:

(a) a plan showing contours at 1m (3 ft) intervals in the area 60m (200 ft) on either side of the extended center line of the runway, to the same distance as the profile, the contours to be related to the runway threshold;

(b) an indication where the terrain or any object thereon, within the plan defined in (i), differs by ±3 m (10 ft) in height from the center line profile and is likely to affect a radio altimeter;

(c) a profile of the terrain to a distance of 900 m (3 000 ft) from the threshold along the extended center line of the runway;

(2) Show to a distance not exceeding 2000m (6500ft) from the runway threshold, where the terrain at a distance greater than 900 m (3 000 ft) from the runway threshold is mountainous or otherwise significant to users of the chart, the profile of the terrain;

(3) Show the ILS reference datum height to the nearest half meter or foot.

CHAPTER VII
ENROUTE CHART — ICAO

64. Function

The aeronautical charts service provider shall ensure that the En-route chart provides flight crews with information to facilitate navigation along Air Traffic Service routes in compliance with air traffic services procedures

65. Availability of Enroute Chart

The aeronautical charts service provider shall:

(1) Make available the enroute chart — ICAO in the manner prescribed in regulation 4(b) for all areas where flight information regions have been established in[state];

(2) Provide separate charts where different air traffic services routes, position reporting requirements or lateral limits of flight information regions or control areas exist in different layers of airspace and cannot be shown with sufficient clarity on one chart,

66. Coverage and Scale

The aeronautical charts service provider shall:

(1) Determine the layout of sheet lines by the density and pattern of the air traffic service route structure;

(2) Ensure that the large variations of scale between adjacent charts showing a continuous route structure are be avoided; and

(3) Provide an adequate overlap of charts to ensure continuity of navigation.

67. Projection

The aeronautical charts service provider shall:

(1) Show parallels and meridians at suitable intervals; and

(2) Place graduation marks at consistent intervals along selected parallels and meridians.

68. Identification

The aeronautical charts service provider shall identify each sheet of the chart-by-chart series and number.

69. Culture and Topography

The aeronautical charts service provider shall:

(1) show generalized shore lines of all open water areas, large lakes and rivers except where they conflict with data more applicable to the function of the chart;

(2) show the area minimum altitude within each quadrilateral formed by the parallels and meridians;

(3) Indicate clearly selected orientation used, where charts are not True North orientated.

70. Magnetic Variation

The aeronautical charts service provider shall indicate the isogonics and the date of the isogonic information.

71. Bearings, Tracks and Radials

The aeronautical charts service provider shall:

(1) Ensure that the bearings, tracks and radials are:

(a) magnetic, except as provided for in sub paragraph (b);

(b) shown in parentheses to the nearest tenth of a degree where bearings and tracks are additionally provided as true values for RNAV segments;

(c) clearly indicated where bearings, tracks or radials are given with reference to True North or Grid North;

(2) Identify the reference grid meridian when Grid North is used.

72. Aerodromes

The aeronautical charts service provider shall ensure that all aerodromes used by international civil aviation to which an instrument approach can be made are shown.

73. Prohibited, Restricted and Danger Areas

The aeronautical charts service provider shall depict the prohibited, restricted and danger areas relevant to the layer of airspace with their identification and vertical limits.

74. Air Traffic Services System

The aeronautical charts service provider shall:

(1) show the components of the established air traffic services system where appropriate;

(2) ensure that the components include the following:

(a) the radio navigation aids associated with the air traffic services system together with their names, identifications, frequencies and geographical coordinates in degrees, minutes and seconds;

(b) in respect of DME, additionally the elevation of the transmitting antenna of the DME to the nearest 30 m (100 ft);

(c) an indication of all designated airspace, including lateral and vertical limits and the appropriate class of airspace;

(d) all air traffic services routes for en-route flight including route designators, the track to the nearest degree in both directions along each segment of the routes and, where established, the designation of the navigation specification(s) including any limitations and the direction of traffic flow;

(e) all significant points which define the air traffic services routes and are not marked by the position of a radio navigation aid, together with their name-codes and geographical coordinates in degrees, minutes and seconds;

(f) in respect of waypoints defining VOR/DME area navigation routes, additionally,

(i) the station identification and radio frequency of the reference VOR/DME;

(ii) the bearing to the nearest tenth of a degree and the distance to the nearest two-tenths of a kilometre (tenth of a nautical mile) from the reference VOR/ DME, if the waypoint is not collocated with it;

(g) an indication of all compulsory and "on-request" reporting points and ATS/MET reporting points;

(h) the distances to the nearest kilometre or nautical mile between significant points constituting turning points or reporting points;

(i) change-over points on route segments defined by reference to very high frequency omnidirectional radio ranges, indicating the distances to the nearest kilometre or nautical mile to the navigation aids;

(j) minimum enroute altitudes and minimum obstacle clearance altitudes, on ATS routes to the nearest higher 50 metres or 100 feet (Manual of ANS Standards Part I, Section I-chapter 2 paragraph 2.22);

(k) communication facilities listed with their channels and, if applicable, logon address and satellite voice communications (SATVOICE) number; and

(l) air defense identification zone (ADIZ) properly identified.

75. Supplementary Information

The aeronautical charts service provider shall:

(1) Show the details of departure and arrival routes and associated holding patterns in terminal areas unless they are shown on an Area Chart, a Standard Departure Chart — Instrument (SID) — ICAO or a Standard Arrival Chart — Instrument (STAR) — ICAO; and

(2) Show and identify the altimeter setting regions, where established.

CHAPTER VIII
AREA CHART

76. Function

The aeronautical charts service provider shall ensure that the area chart provides the flight crew with information to facilitate the following phases of instrument flight:

(1) The transition between the en-route phase and approach to an aerodrome.

(2) The transition between take-off/missed approach and en-route phase of flight.

(3) Flights through areas of complex ATS routes or airspace structure.

77. Availability of Area Chart

The aeronautical charts service provider shall

(1) Make available the area chart — ICAO in the manner specified in these regulations where the air traffic services routes or position reporting requirements are complex and cannot be adequately shown on an En-route Chart;

(2) Provide separate charts where air traffic services routes or position reporting requirements are different for arrivals and for departures, and cannot be shown with sufficient clarity on one chart.

78. Coverage and Scale

The aeronautical charts service provider shall:

(1) Ensure that the coverage of each chart extends to points that effectively show departure and arrival routes;

(2) Draw chart to scale and show a scale-bar.

79. Projection

The aeronautical charts service provider shall:

(1) Use a conformal projection on which a straight line approximates a great circle;

(2) Show the parallels and meridians at suitable intervals; and

(3) Place graduation marks at consistent intervals along the neat lines, as appropriate.

80. Identification

The aeronautical charts service provider shall identify the chart by a name associated with the airspace portrayed.

81. Culture and Topography

The aeronautical charts service provider shall show:

(1) The generalized shorelines of all open water areas, large lakes and rivers except where they conflict with data more applicable to the function of the charts;

(2) All relief exceeding 300 m (1 000 ft) above the elevation of the primary aerodrome by smoothed contour lines, contour values and print layer tints in brown, in areas where significant relief exists;

(3) Appropriate spot elevations, including the highest elevation within each top contour line, print in black and show obstacles.

82. Magnetic Variation

The aeronautical charts service provider shall show the average magnetic variation of the area covered by the chart to the nearest degree.

83. Bearings, Tracks and Radials

The aeronautical charts service provider shall:

(1) Ensure that the bearings, tracks and radials are:

(a) magnetic, except as provided for in paragraph (b);

(b) shown in parentheses to the nearest tenth of a degree where bearings and tracks are additionally provided as true values for RNAV segments;

(c) clearly indicated when Grid North is used;

(2) Identify the reference grid meridian where bearings, tracks or radials are given with reference to True North or Grid North.

84. Aerodromes

The aeronautical charts service provider shall show all aerodromes which affect the terminal routings and where appropriate, a runway pattern symbol is used.

85. Prohibited, Restricted and Danger Areas

The aeronautical charts service provider shall depict prohibited, restricted and danger areas with their identification and vertical limits.

86. Area Minimum Altitudes

The aeronautical charts service provider shall show the area minimum altitudes within quadrilaterals formed by the parallels and meridians.

87. Air Traffic Services System

The aeronautical charts service provider shall:

(1) Show components of the established relevant air traffic services system.

(2) Ensure that the components referred to in sub- regulation (1) of this constitution include the following:

(a) the radio navigation aids associated with the air traffic services system, together with their names, identifications, frequencies and geographical coordinates in degrees, minutes and seconds;

(b) in respect of DME, additionally the elevation of the transmitting antenna of the DME to the nearest 30 m (100 ft);

(c) terminal radio aids which are required for outbound and inbound traffic and for holding patterns;

(d) the lateral and vertical limits of all designated airspace and the appropriate class of airspace;

(e) the designation of the navigation specification(s) including any limitations, where established;

(f) holding patterns and terminal routings, together with the route designators, and the track to the nearest degree along each segment of the prescribed airways and terminal routings;

(g) all significant points which define the terminal routings and are not marked by the position of a radio navigation aid, together with their name-codes and geographical coordinates in degrees, minutes and seconds;

(h) in respect of waypoints defining VOR/DME area navigation routes, additionally,

(i) the station identification and radio frequency of the reference VOR/DME;

(ii) the bearing to the nearest tenth of a degree and the distance to the nearest two-tenths of a kilometre (tenth of a nautical mile) from the reference VOR/ or DME, if the waypoint is not collocated with it;

(i) an indication of all compulsory and "on-request" reporting points;

(j) the distances to the nearest kilometre or nautical mile between significant points constituting turning points or reporting points;

(k) change-over points on route segments defined by reference to very high frequency omnidirectional radio ranges, indicating the distances to the nearest kilometre or nautical mile to the radio navigation aids;

(l) minimum en-route altitudes and minimum obstacle clearance altitudes, on ATS routes to the nearest higher 50 metres or 100 feet;

(m) established minimum vectoring altitudes to the nearest higher 50 m or 100 ft, clearly identified;

(n) area speed and level/altitude restrictions where established;

(o) communication facilities listed with their channels and, if applicable, logon address and SATVOICE number; and;

(p) an indication of "flyover" significant points.

CHAPTER IX
STANDARD DEPARTURE CHART — INSTRUMENT (SID) - ICAO

88. Function

The Standard Departure chart - Instrument shall provide the flight crew with information to enable it to comply with the designated standard departure route instrument from take-off phase to the en-route phase.

89. Availability of Standard Departure Chart — Instrument (SID)

The aeronautical charts service provider shall make available the standard departure Chart — instrument (SID) wherever standard departure route — instrument has been established and cannot be shown with sufficient clarity on the Area Chart — ICAO.

90. Coverage and Scale

The aeronautical charts service provider shall:

(1) Ensure that the coverage of the chart is sufficient to indicate the point where the departure route begins and the specified significant point at which the en-route phase of flight along a designated air traffic services route can be commenced;

(2) Draw the chart to scale and show a scale bar;

(3) Show the annotation “NOT TO SCALE” and use the symbol for scale break on tracks and other aspects of the chart which are too large to be drawn to scale, when the chart is not drawn to scale.

91. Projection

The aeronautical charts service provider shall:

(1) Use a conformal projection on which a straight line approximates a great circle;

(2) Show the parallels and meridians at suitable intervals, when the chart is drawn to scale.

(3) Place the graduation marks at consistent intervals along the neat lines.

92. Identification

The aeronautical charts service provider shall identify the chart by the name of the city or town or area which the aerodrome serves.

93. Culture and Topography

The aeronautical charts service provider shall:

(1) Show the generalized shore lines of all open water areas, large lakes and rivers where the chart is drawn to scale except where they conflict with data more applicable to the function of the chart;

(2) Draw the chart to scale and show all relief exceeding 300m (1 000ft) above the aerodrome elevation by smoothed contour lines, contour values and layer tints printed in brown in areas where significant relief exists; and

(3) Show appropriate spot elevations, including the highest elevation within each top contour line, printed in black and also show obstacles.

94. Magnetic Variation

The aeronautical charts service provider shall show the magnetic variation used in determining the magnetic bearings, tracks and radials to the nearest degree.

95. Bearings, Tracks and Radials

The aeronautical charts service provider shall:

(1) Ensure that bearings, tracks and radials are magnetic and the bearings and tracks are shown in parentheses to the nearest tenth of a degree where bearings and tracks are additionally provided as true values for RNAV segments;

(2) Clearly indicate where bearings, tracks or radials are given with reference to True North or Grid North; and identify the reference grid meridian when Grid North is used.

96. Aerodromes

The aeronautical charts service provider shall:

(1) Show the runway pattern for the aerodrome of departure; and

(2) Show and identify all aerodromes which affect the designated standard departure route — instrument, and where appropriate, show the aerodrome runway patterns.

97. Prohibited, Restricted and Danger Areas

The aeronautical charts service provider shall show prohibited, restricted and danger areas which may affect the execution of the procedures with their identification and vertical limits.

98. Minimum Sector Altitude

The aeronautical charts service provider shall:

(1) Show the established minimum sector altitude with a clear indication of the sector to which it applies;

(2) Draw the chart to scale and show area minimum altitudes within quadrilaterals formed by the parallels and meridians where the minimum sector altitude has not been established.; and

(3) Show the area minimum altitudes in those parts of the chart not covered by the minimum sector altitude where the minimum sector altitude has not been established.

99. Air Traffic Services System

(1) The aeronautical charts service provider shall show components of the established relevant air traffic services system.

(2) The components of the air traffic system shall comprise the following:

(a) a graphic portrayal of each standard departure route — instrument, including:

(i) for departure procedures designed specifically for helicopters the term “CAT H” shall be depicted in the departure chart plan view;
(iii) route designator;
(iv) significant points defining the route;
(v) track or radial to the nearest degree along each segment of the route;
(vi) distances to the nearest kilometer or nautical mile between significant points;
(vii) minimum obstacle clearance altitudes, along the route or route segments and altitudes required by the procedure to the nearest higher 50 m or 100 ft and flight level restrictions where established;
(viii) where the chart is drawn to scale and vectoring on departure is provided, established minimum vectoring altitudes to the nearest higher 50 m or 100 ft, clearly identified;

(3) The radio navigation aid(s) associated with the route(s) including:

(a) when the radio navigation aid is used for conventional navigation:

(i) plain language name;
(ii) identification;
(iii) Morse code
(iv) frequency;
(v) geographical coordinates in degrees, minutes and seconds; and
(vi) for DME, the channel and the elevation of the transmitting antenna of the DME to the nearest 30 m (100 ft);

(b) when the radio navigation aid is used as a significant point for area navigation:

(i) plain language name; and
(ii) identification;

(4) Significant points not marked by the position of a radio navigation aid including:

(a) when the significant point is used for conventional navigation:
(i) name-code;
(ii) geographical coordinates in degrees, minutes and seconds;
(iii) bearing to the nearest tenth of a degree from the reference radio navigation aid;
(iv) distance to the nearest two-tenths of a kilometer (tenth of a nautical mile) from the reference radio navigation aid; and
(v) identification of the reference radio navigation aid;
(b) when the significant point is used for area navigation:
(C) name-code

(5) Applicable holding patterns; transition altitude/height to the nearest higher 300 m or 1 000 ft;

(6) The position and height of close-in obstacles which penetrate the obstacle identification surface (OIS). A note shall be included whenever close-in obstacles penetrating the OIS exist but which were not considered for the published procedure design gradient;

(7) Area speed restrictions, where established;

(8) The designation of the navigation specification(s) including any limitations, where established;

(9) All compulsory and "on-request" reporting points;

(10) Radio communication procedures, including:

(a) call sign(s) of ATS unit(s);
(b) frequency and if applicable, SATVOICE number;
(c) transponder setting, where appropriate; an indication of "flyover" significant points;

(11) The aeronautical charts service provider shall provide a textual description of standard departure route(s) — instrument (SID) and relevant communication failure procedures and whenever feasible, be shown on the chart or on the same page which contains the chart.

100. Aeronautical Database Requirements

The aeronautical charts service provider shall publish appropriate data to support navigation database coding on the verso of the chart or as a separate properly referenced sheet as specified in Schedule 6.

CHAPTER X
STANDARD ARRIVAL CHART —INSTRUMENT (STAR) — ICAO

101. Function

The STAR- ICAO chart shall provide the flight crew with information to enable the flight crew to comply with the designated standard arrival route instrument from the en-route phase to the approach phase.

102. Availability of Standard Arrival Chart — Instrument (STAR)

The aeronautical charts service provider shall make available the Standard Arrival Chart — Instrument (STAR) — ICAO, wherever a standard arrival route — instrument has been established and cannot be shown with sufficient clarity on the Area Chart.

103. Coverage and Scale

The aeronautical charts service provider shall:

(1) Ensure that the coverage of the chart is sufficient to indicate the points where the en-route phase ends and the approach phase begins;

(2) Draw the chart to scale and show a scale-bar; and

(3) Show the annotation "NOT TO SCALE" is when the chart is not drawn to scale and use the symbol for scale break on tracks and other aspects of the chart which are too large to be drawn to scale.

104. Projection

The aeronautical charts service provider shall:

(1) Use a conformal projection on which a straight line approximates a great circle;

(2) Show the parallels and meridians at suitable intervals when the chart is drawn to scale; and

(3) Place the graduation marks are placed at consistent intervals along the neat lines.

105. Identification

The aeronautical charts service provider shall identify the chart by the name of the city or town or area which the aerodrome serves.

106. Culture and Topography

The aeronautical charts service provider shall:

(1) show the generalized shore lines of all open water areas, large lakes and rivers are shown where the chart is drawn to scale, except where they conflict with data more applicable to the function of the chart;

(2) draw the chart to scale and show all relief exceeding 300 m (1 000 ft) above the aerodrome elevation by smoothed contour lines, contour values and layer tints printed in brown in areas where significant relief exists; and

(3) show appropriate spot elevations, including the highest elevation within each top contour line, are shown printed in black and obstacles.

107. Magnetic Variation

The aeronautical charts service provider shall show the magnetic variation used in determining the magnetic bearings, tracks and radials to the nearest degree.

108. Bearings, Tracks and Radials

The aeronautical charts service provider shall:

(1) Ensure that bearings, tracks and radials are magnetic and the bearings and tracks are shown in parentheses to the nearest tenth of a degree where bearings and tracks are additionally provided as true values for RNAV segments;

(2) Clearly indicate where bearings, tracks or radials are given with reference to True North or Grid North; and

(3) Identify the reference grid meridian when Grid North is used.

109. Aerodromes

The aeronautical charts service provider shall:

(1) Show the runway pattern for the aerodrome of landing;

(2) Show and identify all aerodromes which affect the designated standard arrival route — instrument, and where appropriate, show the aerodrome runway patterns.

110. Prohibited, Restricted and Danger Areas

The aeronautical charts service provider shall show the prohibited, restricted and danger areas which may affect the execution of the procedures with their identification and vertical limits.

111. Minimum Sector Altitude

The aeronautical charts service provider shall:

(1) Show the established minimum sector altitude with a clear indication of the sector to which the minimum sector altitude applies;

(2) Draw the chart to scale and show area minimum altitudes within quadrilaterals formed by the parallels and meridians where the minimum sector altitude has not been established; and

(3) Show area minimum altitudes in those parts of the chart not covered by the minimum sector altitude where the minimum sector altitude has not been established.

112. Air Traffic Services System

(1) The aeronautical charts service provider shall show the components of the established relevant air traffic services system.

(2) The components shall comprise the following:

(a) graphic portrayal of each standard arrival route — instrument, including:

(i) route designator;
(ii) significant points defining the route;
(iii) track or radial to the nearest degree along each segment of the route;
(iv) distances to the nearest kilometer or nautical mile between significant points;
(v) minimum obstacle clearance altitudes, along the route or route segments and altitudes required by the procedure to the nearest higher 50 m or 100 ft and flight level restrictions where established;
(vi) where the chart is drawn to scale and vectoring on arrival is provided, established minimum vectoring altitudes to the nearest higher 50 m or 100ft, clearly identified;

(3) The radio navigation aid associated with the route including:

(a) when the radio navigation aid is used for conventional navigation:

(i) plain language name;
(ii) identification;
(iii) Morse code;

(iv) frequency;
(v) geographical coordinates in degrees, minutes and seconds; and
(vi) for DME, the channel and the elevation of the transmitting antenna of the DME to the nearest 30 m (100 ft);

(b) when the radio navigation aid is used as a significant point for area navigation:

(i) plain language name; and
(ii) identification;

(4) Significant points not marked by the position of a radio navigation aid including:

(a) when the significant point is used for conventional navigation:

(i) name-code;
(ii) geographical coordinates in degrees, minutes and seconds;
(iii) bearing to the nearest tenth of a degree from the reference radio navigation aid;
(iv) distance to the nearest two-tenths of a kilometer (tenth of a nautical mile) from the reference radio navigation aid;
(v) identification of the reference radio navigation aid;

(b) When the significant point is used for area navigation:

(i) name-code;

(5) Applicable holding patterns.

(6) Transition altitude/height to the nearest higher 300 m or 1 000 ft.

(7) Area speed restrictions, where established.

(8) The designation of the navigation specification(s) including any limitations, where established.

(9) All compulsory and “on-request” reporting points.

(10) Radio communication procedures, including:

(a) call sign(s) of ATS unit(s);
(b) frequency and if applicable, SATVOICE number;
(c) transponder setting, where appropriate;

(11) An indication of “flyover” significant waypoints; and

(12) For arrival procedures to an instrument approach designed specifically for helicopters the term “CAT H” shall be depicted in the arrival chart plan view.

(13) The aeronautical charts service provider shall provide textual description of standard arrival route(s) — instrument (STAR) and relevant communication failure procedures and whenever feasible, be shown on the chart or on the same page which contains the chart.

113. Aeronautical Database Requirements

The aeronautical charts service provider shall publish appropriate data to support navigation database coding on the verso of the chart or as a separate properly referenced sheet as specified in Schedule of this Regulations.

CHAPTER XI
INSTRUMENT APPROACH CHART – ICAO

114. Function

The Instrument Approach chart shall provide flight crews with information which will enable them to perform an approved instrument approach procedure to the runway of intended landing including the missed approach procedure and, where applicable, associated holding patterns.

115. Availability of Instrument Approach Charts

The aeronautical charts service provider shall:

(1) Make available the instrument Approach Charts— ICAO for all aerodromes used by international civil aviation where instrument approach procedures have been established by the Republic of South Sudan**.**

(2) Provide a separate Instrument Approach Chart— ICAO for each precision approach procedure established by the instrument approach procedures have been established by the Republic of South Sudan**.**

(3) Provide a separate Instrument Approach Chart— ICAO for each non-precision approach procedure established by the approach procedures have been established by the Republic of South Sudan.

(4) Provide more than one chart, when the values for track, time or altitude differ between categories of aircraft on other than the final approach segment of the instrument approach procedures and the listing of these differences on a single chart could cause clutter or confusion; and

(5) Revise the instrument Approach Charts— ICAO whenever information essential to safe operation becomes out of date.

116. Coverage and Scale

The aeronautical charts service provider shall:

(1) Ensure that the coverage of the chart is sufficient to include all segments of the instrument approach procedure and such additional areas as may be necessary for the type of approach intended.

(2) Select a scale that ensures optimum legibility consistent with-

(a) the procedure shown on the chart;

(b) Sheet size.

(3) Give a scale indication

(4) Show a distance circle with a radius of 20 km (10 NM) centered on a DME located on or close to the aerodrome, or on the aerodrome reference point where no suitable DME is available, and the radius of the DME indicated on the circumference, except where this is not practicable; and

(5) Show a distance scale directly below the profile.

117. Format

The aeronautical charts service provider shall ensure that the sheet size is 210 × 297 mm (8.27 x 11.69 inches) (A4).

118. Projection

The aeronautical charts service provider shall:

(1) Use a conformal projection on which a straight line approximates a great circle; and

(2) Place the graduation marks at consistent intervals along the neat lines.

119. Identification

The aeronautical charts service provider shall identify the chart by the name of the city or town or area which the aerodrome serves.

120. Culture and Topography

The aeronautical charts service provider shall:

(1) Show culture and topographic information pertinent to the safe execution of the instrument approach procedure, including the missed approach procedure, associated holding procedures and visual maneuvering procedure when established, is shown;

(2) Name topographic information, only, when necessary, to facilitate the understanding of such information, and the minimum is delineation of land masses and significant lakes and rivers;

(3) Show relief in a manner best suited to the particular elevation characteristics of the area;

(4) Show all relief exceeding 150 m (500 ft) above the aerodrome elevation by smoothed contour lines, contour values and layer tints printed in brown, in areas where relief exceeds 1 200 m (4 000 ft) above the aerodrome elevation within the coverage of the chart or 600 m (2 000 ft) within 11 km (6 NM) of the aerodrome reference point or when final approach or missed approach procedure gradient is steeper than optimal due to terrain;

(5) Show appropriate spot elevations, including the highest elevation within each top contour line, printed in black; and

(6) show in areas where relief is lower than specified in paragraph (d), all relief exceeding 150 m (500 ft) above the aerodrome elevation is shown by smoothed contour lines, contour values and layer tints printed in brown and appropriate spot elevations, including the highest elevation within each top contour line, printed in black.

121. Magnetic Variation

The aeronautical charts service provider shall show the magnetic variation, and the value of the variation, indicated to the nearest degree, shall agree with that used in determining magnetic bearings, tracks and radials.

122. Bearings, Tracks and Radials

The aeronautical charts service provider shall:

(1) Ensure that bearings, tracks and radials are magnetic.

(2) Where bearings and tracks are additionally provided as true values for RNAV segments, show in parentheses to the nearest tenth of a degree

(3) Clearly indicate where bearings, tracks or radials are given with reference to True North or Grid North; and

(4) Identify reference grid meridian when Grid North is used.

123. Aerodromes

The aeronautical charts service provider shall show:

(1) All aerodromes which show a distinctive pattern from the air by the appropriate symbol and identify abandoned aerodromes as abandoned.

(2) The runway pattern, at a scale sufficiently large to show it clearly for-

(a) the aerodrome on which the procedure is based.
(b) aerodromes affecting the traffic pattern or so situated as to be likely, under adverse weather conditions, to be mistaken for the aerodrome of intended landing.

(3) The aerodrome elevation to the nearest meter or foot in a prominent position on the chart; and

(4) The threshold elevation or, where applicable, the highest elevation of the touchdown zone to the nearest meter or foot.

124. Obstacles

The aeronautical charts service provider shall:

(1) Show obstacles on the plan view of the chart;

(2) Identify obstacles, if one or more those obstacles are the determining factor of an obstacle clearance altitude or height.

(3) Show the elevation of the top of obstacles to the nearest, next higher metre or foot.

(4) Show the heights of obstacles above a datum other than mean sea level are shown

and, when shown, they shall be given in parentheses on the chart.

(5) Use the aerodrome elevation as the datum when the heights of obstacles above a datum other than mean sea level are shown, except that, at aerodromes having an instrument runway with a threshold elevation more than 2 m (7 ft) below the aerodrome elevation, the chart datum is the threshold elevation of the runway to which the instrument approach is related.

(6) State in a prominent position on the chart the datum used, where a datum other than mean sea level is used; and

(7) Indicate on the chart, where an obstacle free zone has not been established for a precision approach runway Category I.

125. Prohibited, Restricted and Danger Areas

The aeronautical charts service provider shall show prohibited areas, restricted areas, and danger areas which may affect the execution of the procedures with their identification and vertical limits.

126. Radio Communication Facilities and Navigation Aids

The aeronautical charts service provider shall:

(1) Show radio navigation aids required for the procedures together with their frequencies, identifications and track-defining characteristics, if any.

(2) Clearly identify the facility to be used for track guidance for final approach in the case of a procedure in which more than one station is located on the final approach track.

(3) Give consideration to the elimination from the approach chart of those facilities that are not used by the procedure.

(4) Show only the plain language name and identification of a radio navigation aid when it is used as a significant point for area navigation.

(5) Show and identify the initial approach fix, the intermediate approach fix, the final approach fix or final approach point for an ILS approach procedure, the missed approach point, where established, and other essential fixes or points comprising the procedure.

(6) Identify the with geographical coordinates in degrees, minutes and seconds the final approach fix used for conventional navigation or final approach point for an ILS approach procedure.

(7) Show or indicate on the chart radio navigation aids that might be used in diversionary procedures together with their track-defining characteristics, if any;

(8) Show radio communication frequencies, including call signs that are required for the execution of the procedures.

(9) Show the distance to the aerodrome from each radio navigation aid concerned with the final approach to the nearest kilometer or nautical mile when required by the

procedures.

(10) Show the bearing to the nearest degree when no track-defining aid indicates the bearing of the aerodrome.

127. Minimum Sector Altitude or Terminal Arrival Altitude

The aeronautical charts service provider shall show the minimum sector altitude or terminal arrival altitude established by the competent authority, with a clear indication of the sector to which the minimum sector altitude or terminal arrival altitude.

(1) Portrayal of procedure track the aeronautical charts service provider shall:

(a) provide plan view that shows the following information in the manner indicated:

(i) the approach procedure track by an arrowed continuous line indicating the direction of flight;

(ii) the missed approach procedure track by an arrowed broken line;

(iii) any additional procedure track, other than those specified in (i) and (ii), by an arrowed dotted line;

(iv) bearings, tracks, radials to the nearest degree and distances to the nearest two-tenths of a kilometer or tenth of a nautical mile or times required for the procedure;

(v) where no track-defining aid is available, the magnetic bearing to the nearest degree to the aerodrome from the radio navigation aids concerned with the final approach;

(vi) the boundaries of any sector in which visual manoeuvring is prohibited;

(b) where specified, the holding pattern and minimum holding altitude/height associated with the approach and missed approach;

(c) caution notes where required, prominently displayed on the face of the chart; and

(d) an indication of "flyover" significant points;

(2) Ensure that the plan view shows the distance to the aerodrome from each radio navigation aid concerned with the final approach;

(3) Provide a profile is below the plan view showing the following data:

(a) the aerodrome by a solid block at aerodrome elevation;

(b) the profile of the approach procedure segments by an arrowed continuous line indicating the direction of flight;

(c) the profile of the missed approach procedure segment by an arrowed broken line and a description of the procedure;

(d) the profile of any additional procedure segment, other than those specified in ii) and iii), by an arrowed dotted line;

(e) bearings, tracks, radials to the nearest degree and distances to the nearest two-tenths of a kilometer or tenth of a nautical mile or times required for the procedure;

(f) altitudes/heights required by the procedures, including transition altitude and procedure altitudes/heights, and heliport crossing height (HCH), where established;

(g) limiting distance to the nearest kilometer or nautical mile on procedure turn, when specified;

(h) the intermediate approach fix or point, on procedures where no course reversal is authorized;

(i) a line representing the aerodrome elevation or threshold elevation, as appropriate, extended across the width of the chart including a distance scale with its origin at the runway threshold.

(4) Show heights required by procedures in parentheses, using the height datum selected in accordance with regulation 124 (e).(11.10.2.5.)

(5) Provide profile view which includes a ground profile or a minimum altitude or height portrayal as follows:

(a) a ground profile shown by a solid line depicting the highest elevations of the relief occurring within the primary area of the final approach segment. The highest elevations of the relief occurring in the secondary areas of the final approach segment shown by a dashed line; or

(b) minimum altitudes or heights in the intermediate and final approach segments indicated within bounded shaded blocks.

128. Aerodrome Operating Minima

The aeronautical charts service provider shall:

(1) Show aerodrome operating minima when established by the **[State]**.

(2) Show obstacle clearance altitudes or heights for the aircraft categories for which the procedure is designed;

(3) Publish for precision approach procedures, the OCA/H for Cat DL aircraft of wing span between 65 m and 80 m and vertical distance between the flight path of the wheels and the glide path antenna between 7 m and 8 m, when necessary.

129. Supplementary Cartographic

The aeronautical charts service provider shall:

(1) Where the missed approach point is defined by:

(a) a distance from the final approach fix is shown or

(b) a facility or a fix and the corresponding distance from the final approach fix; show the distance to the nearest two-tenths of a kilometer or tenth of a nautical mile and a table showing ground speeds and times from the final approach fix to the missed approach point.

(2) Provide a table showing altitudes or heights for each 2 km or 1 NM is shown as appropriate when DME is required for use in the final approach segment.

(3) Ensure that the table does not include distances which would correspond to

altitudes/heights below the OCA/H.

(4) Include a table showing the altitudes or heights for procedures in which DME is not required for use in the final approach segment but where a suitably located DME is available to provide advisory descent profile information;

(5) Show a rate of descent table.

(6) Show the final approach descent gradient to the nearest one-tenth of a per cent and, in parentheses, descent angle to the nearest one-tenth of a degree, for non-precision approach procedures with a final approach fix.

(7) Show the reference datum height to the nearest half meter or foot and the glide path or elevation or vertical path angle to the nearest one-tenth of a degree, for precision approach procedures and approach procedures with vertical guidance.

(8) Give a clear indication, whether it applies to the ILS, the associated ILS localizer only procedure, or both when a final approach fix is specified at the final approach point for ILS.

(9) In the case of MLS, give a clear indication, when an FAF has been specified at the final approach point.

(10) Include a cautionary note, if the final approach descent gradient or angle for any type of instrument approach procedure exceeds the maximum value as specified by the Authority.

(11) Include a note on the chart indicating the approach procedures that are authorized for simultaneous independent or dependent operations. The note shall include the runway(s) involved and if they are closely spaced.

130. Aeronautical Database Requirements

The aeronautical charts service provider shall:

Publish appropriate data to support navigation database coding for non-RNAV procedures on the verso of the chart or as a separate properly referenced sheet as specified in Schedule 6.

CAHPTER XII
VISUAL APPROACH CHART – ICAO

131. Function

The Visual Approach chart shall provide flight crews with information which will enable the flight crew to transit from the en-route or descent to approach phases of flight to the runway of intended landing by means of visual reference.

132. Availability of Visual Approach Chart

The aeronautical charts service provider shall make available the Visual Approach Chart — ICAO in the manner specified for all aerodromes used by international civil aviation where:

(1) Only limited navigation facilities are available; or

(2) Radio communication facilities are not available; or

(3) No adequate aeronautical charts of the aerodrome and its surroundings at 1:500,000 or greater scale are available; or

(4) Visual approach procedures have been established.

133. Scale

The aeronautical charts service provider shall:

(1) Ensure that the scale is sufficiently large to permit depiction of significant features and indication of the aerodrome layout.

(2) Not use a scale smaller than 1:500 000 and

(3) Draw the visual Approach Chart is drawn to the same scale, when an Instrument Approach Chart is available for a given aerodrome.

134. Format

The aeronautical charts service provider shall ensure that the sheet size is 210 × 297 mm (8.27 x 11.69 inches) (A4).

135. Projection

The aeronautical charts service provider shall:

(1) Use a conformal projection on which a straight line approximates a great circle is used.

(2) Place the graduation marks at consistent intervals along the neat lines.

136. Identification

The aeronautical charts service provider shall identify the chart by the name of the city or town which the aerodrome serves and the name of the aerodrome.

137. Culture and Topography

The aeronautical charts service provider shall:

(1) Show natural and cultural landmarks;

(2) Include geographical place names only when they are required to avoid confusion or ambiguity;

(3) Show shore lines, lakes, rivers and streams;

(4) Show relief in a manner best suited to the particular elevation and obstacle characteristics of the area covered by the chart;

(5) Carefully select spot elevations, when shown; and

(6) Clearly differentiate in their presentation figures relating to different reference levels.

138. Bearings, Tracks and Radials

The aeronautical charts service provider shall:

(1) Ensure that bearings, tracks and radials are magnetic.

(2) Clearly indicate where bearings, tracks or radials are given with reference to True North or Grid North.

(3) Identify the reference grid meridian, when Grid North is used.

139. Aerodromes

The aeronautical charts service provider shall:

(1) Show all aerodromes by the runway pattern;

(2) Indicate the restrictions on the use of any landing direction;

(3) Where there is any risk of confusion between two neighboring aerodromes, this is indicated;

(4) Identify abandoned aerodromes as abandoned and

(5) Show the aerodrome elevation in a prominent position on the chart.

140. Obstacles

The aeronautical charts service provider shall:

(1) Show and identify obstacles;

(2) Show elevation of the top of obstacles to the nearest next higher meter or foot;

(3) Show heights of obstacles above the aerodrome elevation; and

(4) State in a prominent position on the chart height datum is and give the heights in parentheses on the chart, when the heights of obstacles are shown.

141. Prohibited, Restricted and Danger Areas

The aeronautical charts service provider depict prohibited areas, restricted areas, and danger areas with their identification and vertical limits.

142. Designated airspace

The aeronautical charts service provider shall depict control zones and aerodrome traffic zones with their vertical limits and the appropriate class of airspace, where applicable.

143. Visual Approach Information

The aeronautical charts service provider shall show:

(1) Visual approach procedures, where applicable;

(2) Visual aids for navigation as appropriate; and

(3) Show the location and type of the visual approach slope indicator systems with their nominal approach slope angle, minimum eye height over the threshold of the on-slope signal and where the axis of the system is not parallel to the runway center line, the angle and direction of displacement, either left or right.

144. Supplementary Information

The aeronautical charts service provider shall show:

(1) Radio navigation aids together with their frequencies and identifications, as appropriate; and

(2) Radio communication facilities with their frequencies, as appropriate.

CHAPTER XIII
AERODROME OR HELIPORT CHART - ICAO

145. Function

The aerodrome or heliport chart shall provide flight crews with information to facilitate the ground movement of aircraft:

(1) From the aircraft stand to the runway.

(2) From the runway to the aircraft stand; and helicopter movement:

(a) from the helicopter stand to the touchdown and lift-off area and to the final approach and take-off area;
(b) from the final approach and take-off area to the touchdown and lift-off area and to the helicopter stand;
(c) along helicopter ground and air taxiways; and
(d) along air transit routes.

(3) It shall also provide essential operational information at the aerodrome or heliport.

146. Availability of Aerodrome or Heliport Chart

The aeronautical charts service provider shall:

(1) Make available Aerodrome or Heliport Chart— ICAO in the manner specified in these regulations for all aerodromes or heliports regularly used by international civil aviation;

(2) Make available Aerodrome or Heliport Chart — ICAO is in the manner specified for all other aerodromes or heliports available for use by international civil aviation.

147. Coverage and Scale

The aeronautical charts service provider shall:

(1) Ensure that the coverage and scale are sufficiently large to show clearly all the elements listed in regulation 151

(2) Show a linear scale.

148. Identification

The aeronautical charts service provider shall identify the chart by the name of the city or town or area which the aerodrome or heliport serves and the name of the aerodrome or heliport.

149. Magnetic Variation

The aeronautical charts service provider shall show the True and Magnetic North arrows and magnetic variation to the nearest degree and annual change of the magnetic variation.

150. Aerodrome or Heliport Data

The Aerodrome or heliport chart shall show:

(1) Geographical coordinates in degrees, minutes and seconds for the aerodrome/heliport reference point.

(2) Elevations, to the nearest meter or foot, of the aerodrome or heliport and apron (altimeter checkpoint locations) where applicable; and for non-precision approaches, elevations and geoid undulations of runway thresholds and the geometric Centre of the touchdown and lift-off area.

(3) Elevations and geoid undulations, to the nearest half-meter or foot, of the precision approach runway threshold, the geometric Centre of the touchdown and lift-off area, and at the highest elevation of the touchdown zone of a precision approach runway;

(4) All runways including those under construction with designation number, length and width to the nearest meter, bearing strength, displaced thresholds, stop ways, clearways, runway directions to the nearest degree magnetic, type of surface and runway markings;

(5) All aprons, with aircraft/helicopter stands, lighting, markings and other visual guidance and control aids, where applicable, including location and type of visual docking guidance systems, type of surface for heliports, and bearing strengths or aircraft type restrictions where the bearing strength is less than that of the associated runways;

(6) Geographical coordinates in degrees, minutes and seconds for thresholds, geometric Centre of touchdown and lift-off area and/or thresholds of the final approach and take-off area (where appropriate);

(7) All taxiways, helicopter air and ground taxiways with type of surface, helicopter air transit routes, with designations, width, lighting, markings (including runway-holding positions and, where established, intermediate holding positions), stop bars, other visual guidance and control aids, and bearing strength or aircraft type restrictions where the bearing strength is less than that of the associated runways;

(8) Where established, hot spot locations with additional information properly annotated;

(9) Geographical coordinates in degrees, minutes, seconds and hundredths of seconds for appropriate taxiway Centre line points and aircraft stands;

(10) Where established, standard routes for taxiing aircraft with their designators;

(11) The boundaries of the air traffic control service;

(12) Position of runway visual range (RVR) observation sites;

(13) Approach and runway lighting;

(14) Location and type of the visual approach slope indicator systems with their nominal approach slope angle, minimum eye height over the threshold of the on-slope signal, and where the axis of the system is not parallel to the runway Centre line, the angle and direction of the displacement;

(15) Relevant communication facilities listed with their channels and, if applicable, logon address.

(16) Obstacles to taxiing.

(17) Aircraft servicing areas and buildings of operational significance.

(18) VOR checkpoint and radio frequency of the aid concerned.

(19) Any part of the depicted movement area permanently unsuitable for aircraft, clearly identified as such.

(20) The location where the wing tips may be safely extended for aerodromes accommodating aero planes with folding wing tips.

151. In Addition to the Items In (1) Relating to Heliports, the Aerodrome or Heliport Chart Shall Show:

(1) Heliport type.

(2) Touchdown and lift-off area including dimensions to the nearest meter, slope, type of surface and bearing strength in tones.

(3) Final approach and take-off area including type, true bearing to the nearest degree, designation number (where appropriate), length and width to the nearest meter, slope and type of surface.

(4) Safety area including length, width and type of surface.

(5) Helicopter clearway including length and ground profile.

(6) Obstacles including type and elevation of the top of the obstacles to the nearest (next higher) meter or foot;

(7) Visual aids for approach procedures, marking and lighting of final approach and take-off area, and of touchdown and lift-off area;

(8) Declared distances to the nearest meter for heliports, where relevant, including:

(a) take-off distance available;
(b) rejected take-off distance available;
(c) landing distance available.

CHAPTER XIV
AERODROME GROUND MOVEMENT CHART - ICAO

152. Function

The aerodrome ground movement chart shall provide flight crews with detailed information to facilitate the ground movement of aircraft to and from the aircraft stands and the parking or docking of aircraft.

153. Availability of Aerodrome Ground Movement Chart

The aeronautical charts service provider shall make available the Aerodrome Ground Movement Chart— ICAO in the manner specified in regulation 4(b) where, due to congestion of information, details necessary for the ground movement of aircraft along the taxiways to and from the aircraft stands cannot be shown with sufficient clarity on the Aerodrome or Heliport Chart — ICAO.

154. Coverage and Scale

The aeronautical charts service provider shall:

(1) Ensure that the coverage and scale are sufficiently large to show clearly all the elements listed in regulation 158; and

(2) Show a linear scale.

155. Identification

The aeronautical charts service provider shall identify the chart by the name of the city or town or area which the aerodrome serves and the name of the aerodrome.

156. Magnetic Variation

The aeronautical charts service provider shall show:

(1) A True North arrow; and

(2) The magnetic variation to the nearest degree and the annual change of the magnetic variation.

157. Aerodrome Data

The aerodrome ground movement chart shall show in a similar manner all the information on the Aerodrome or Heliport Chart — ICAO relevant to the area depicted, including:

(1) Apron elevation to the nearest meter or foot;

(2) Aprons with aircraft stands, bearing strengths or aircraft type restrictions, lighting, marking and other visual guidance and control aids, where applicable, including location and type of visual docking guidance systems;

(3) Geographical coordinates in degrees, minutes, seconds and hundredths of seconds for aircraft stands;

(4) Taxiways with designations, width to the nearest meter, bearing strength or aircraft type restrictions where applicable, lighting, markings (including runway-holding

positions and, where established, intermediate holding positions), stop bars, and other visual guidance and control aids;

(5) Where established, hot spot locations with additional information properly annotated;

(6) Where established, standard routes for taxiing aircraft, with their designators;

(7) Geographical coordinates in degrees, minutes, seconds and hundredths of seconds for appropriate taxiway Centre line points;

(8) The boundaries of the air traffic control service;

(9) Relevant communication facilities listed with their channels and, if applicable, logon address;

(10) Obstacles to taxiing;

(11) Aircraft servicing areas and buildings of operational significance;

(12) VOR checkpoint and radio frequency of the aid concerned;

(13) Any part of the depicted movement area permanently unsuitable for aircraft, clearly identified as such.

(14) The location where the wing tips may be safely extended for aerodromes accommodating aero planes with folding wing tips.

CHAPTER XV
AIRCRAFT PARKING/DOCKING CHART — ICAO

158. Function

The aircraft parking chart shall provide flight crews with detailed information to facilitate the ground movement of aircraft between the taxiways and the aircraft stands and the parking/docking of aircraft.

159. Availability of Aircraft Parking or Docking Chart

The aeronautical charts service provider shall make available ensure that the Aircraft Parking or Docking Chart — ICAO in the manner prescribed in these regulations where due to the complexity of the terminal facilities, the information cannot be shown with sufficient clarity on the Aerodrome/Heliport Chart — ICAO or on the Aerodrome Ground Movement Chart — ICAO.

160. Coverage and Scale

The aeronautical charts service provider shall:

(1) Ensure that the coverage and scale shall be sufficiently large to show clearly all the elements listed in section 164.

(2) Show a linear scale.

161. Identification

The aeronautical charts service provider shall identify the chart by the name of the city or town or area which the aerodrome serves and the name of the aerodrome.

162. Magnetic Variation

The aeronautical charts service provider shall show:

(1) A True North arrow;

(2) The magnetic variation to the nearest degree and its annual change

163. Aerodrome Data

The aircraft parking chart shall show in a similar manner all the information on the Aerodrome or Heliport Chart — ICAO and the Aerodrome Ground Movement Chart — ICAO relevant to the area depicted, including:

(1) Apron elevation to the nearest meter or foot;

(2) Aprons with aircraft stands, bearing strengths or aircraft type restrictions, lighting, marking and other visual guidance and control aids, where applicable, including location and type of visual docking guidance systems;

(3) Geographical coordinates in degrees, minutes, seconds and hundredths of seconds for aircraft stands;

(4) Taxiway entries with designations, including runway-holding positions and, where established, intermediate holding positions, and stop bars;

(5) Where established, hot spot locations with additional information properly annotated;

(6) Geographical coordinates in degrees, minutes, seconds and hundredths of seconds for appropriate taxiway Centre line points;

(7) The boundaries of the air traffic control service;

(8) Relevant communication facilities listed with their channels and, if applicable, logon address;

(9) Obstacles to taxiing;

(10) Aircraft servicing areas and buildings of operational significance;

(11) VOR checkpoint and radio frequency of the aid concerned;

(12) Any part of the depicted movement area permanently unsuitable for aircraft, clearly identified as such.

CHAPTER XVI
WORLD AERONAUTICAL CHART — ICAO 1:1 000 000

164. Function

The World Aeronautical chart – 1:1,000.000 shall provide information to satisfy the requirements of visual air navigation:

(1) As a basic aeronautical chart:

(a) when highly specialized charts lacking visual information do not provide essential data;
(b) to provide complete world coverage at a constant scale with a uniform presentation of planimetric data;
(c) in the production of other charts required by international civil aviation;

(2) As a pre-flight planning chart

165. Availability of World Aeronautical Chart

The aeronautical charts service provider shall:

(1) Make available World Aeronautical Chart — ICAO 1:1 000 000 is in the manner specified in regulation 4(b) for all areas delineated in fifth Schedule.

(2) Ensure that the selection of a scale of other than 1:1 000 000 is determined by regional agreement to ensure complete coverage of all land areas and adequate continuity in any one coordinated series.

166. Scales

The aeronautical charts service provider shall:

(1) show the linear scales for kilometers and nautical miles arranged with their zero points in the same vertical line in the margin in the following order:

(a) kilometers
(b) nautical miles,

(2) ensure that the length of the linear scales represent at least 200 km (110 NM); and

(3) show a conversion scale in meter or feet in the margin.

167. Format

The aeronautical charts service provider shall:

(1) Ensure that the title and marginal notes are in English.

(2) Ensure that the information regarding the number of the adjoining sheets and the unit of measurement to express elevations is located as to be clearly visible when the sheet is folded.

(3) Ensure that the method of folding is as follows:

(a) fold the chart on the long axis near the mid-parallel of latitude; face out, with the bottom part of the chart face upward;

(b) fold inward near the meridian, and fold both halves backward in accordion folds;

(4) Ensure that the sheet lines conform with those shown in the index in fifth Schedule, whenever practicable;

(5) Notify ICAO for publication in the ICAO Aeronautical Chart Catalogue the sheet lines used;

(6) Provide overlaps by extending the chart area on the top and right side beyond the area given on the index;

(7) Ensure that overlaps area contain all aeronautical, topographical, hydrographical and cultural information and

(8) Ensure that the overlap extend up to 28 km (15 NM), if possible, but in any case, from the limiting parallels and meridians of each chart to the neat line.

168. Projection

The aeronautical charts service provider shall:

(1) ensure that the projection is the Lambert conformal conic projection, in separate bands for each tier of charts and the standard parallels for each 4° band is 40 ′ south of the northern parallel and 40 ′ north of the southern parallel;

(2) show the graticules and graduations as follows:

(a) Parallels:

Latitude Parallels	Distance between Graduation on Parallels	
0 to 72^0	30’	1’
72^0 to 84^0	30’	5’
84^0 to 89^0	30’	1^0
89^0 to 90^0	30’	5^0

(Only on degree parallels from 72^0 to $89^{0)}$

(b) Meridians:

Latitude Parallels	Distance between Graduation on Parallels	
0 to 52^0	30’	1’
52^0 to 72^0	30’	1’
(Only on even numbered meridians)		
72° to 84°	10	1’
84° to 89°	50	1’
89° to 90°	150	1’

(Only on every fourth meridian)

(3) Ensure that the graduation marks at 1′ and 5′ intervals extend away from the Greenwich Meridian and from the Equator and each 10′ interval is shown by a mark on both sides of the graticule line;

(4) Ensure that the length of the graduation marks is approximately 1.3 mm (0.05 in) for the 1′ intervals, and 2 mm (0.08 in) for the 5′ intervals and 2 mm (0.08 in) extending on both sides of the graticule line for the 10′ intervals;

(5) Ensure that all meridians and parallels shown are numbered in the borders of the chart;

(6) Ensure that each parallel is numbered within the body of the chart in such a manner that the parallel can be readily identified when the chart is folded; and

(7) Indicate the name and basic parameters of the projection in the margin.

169. Identification

The aeronautical charts service provider shall ensure that sheet numbering is in conformity with the index in fifth Schedule.

170. Built-Up Areas

The aeronautical charts service provider shall:

(1) Select and show cities, towns and villages according to their relative importance to visual air navigation; and

(2) Indicate cities and towns of sufficient size by the outline of their built-up areas and not of their established city limits.

171. Railroads

The aeronautical charts service provider shall show all railroads having landmark value and the important tunnels.

172. Highways and Roads

The aeronautical charts service provider shall:

(1) Show road systems in sufficient detail to indicate significant patterns from the air; and

(2) Not show roads in built-up areas unless they can be distinguished from the air as definite landmarks.

173. Landmarks

The aeronautical charts service provider shall ensure that the natural and cultural landmarks, such as bridges, prominent transmission lines, permanent cable car installations, wind turbines, mine structures, forts, ruins, levees, pipelines, rocks, bluffs, cliffs, sand dunes, isolated lighthouses and lightships, when considered to be of importance for visual air navigation, are shown.

174. Political Boundaries

The aeronautical charts service provider shall show international boundaries and distinguish the un-demarcated and undefined boundaries by descriptive notes.

175. Hydrography

The aeronautical charts service provider shall:

(1) Show all water features compatible with the scale of the chart comprising shore lines, lakes, rivers and streams including those non-perennials in nature, salt lakes, glaciers and ice caps;

(2) Ensure that the tint covering large open water areas is kept very light; and

(3) Ensure that reefs and shoals, including rocky ledges, tidal flats, isolated rocks, sand, gravel, stone and all similar areas, are shown by symbols when of significant landmark value.

176. Contours

The aeronautical charts service provider shall show:

(1) Contours, and the selection of intervals shall be governed by the requirement to depict clearly the relief features required in air navigation; and

(2) Values of the contours used.

177. Hypsometric Tints

The aeronautical charts service provider shall:

(1) When hypsometric tints are used, show the range of elevations for the tints;

(2) Show the scale of the hypsometric tints used on the chart in the margin.

178. Spot Elevations

The aeronautical charts service provider shall:

(1) Show spot elevations at selected critical points, and the elevations selected shall be the highest in the immediate vicinity and generally indicate the top of a peak, ridge, etc.

(2) Show elevations in valleys and at lake surface level which are of special value to the aviator, and the position of each selected elevation shall be indicated by a dot;

(3) Indicate elevation of the highest point on the chart and its geographical position to the nearest five minutes in the margin; and

(4) Ensure that spot elevation of the highest point in any sheet is cleared of hypsometric tinting.

179. Incomplete or Unreliable Relief

The aeronautical charts service provider shall:

(1) For areas that have not been surveyed for contour information label “Relief data incomplete”;

(2) Ensure that charts which spot elevations are generally unreliable bear a warning note prominently displayed on the face of the chart in the colour used for aeronautical information, as follows:

(a) warning; the reliability of relief information on this chart is doubtful; and
(b) elevations are used with caution.

180. Escarpments

The aeronautical charts service provider shall show escarpments when they are prominent landmarks or when cultural detail is very sparse.

181. Wooded Areas

The aeronautical charts service provider shall ensure that:

(1) wooded areas are shown; and

(2) the approximate extreme northern or southern limits of tree growth are indicated by a dashed black line were shown and are appropriately labeled

182. Date of Topographic Information

The aeronautical charts service provider shall show the date of latest information shown on the topographic base is indicated in the margin.

183. Magnetic Variation

The aeronautical charts service provider shall:

(1) Show isogonic lines; and

(2) Indicate the date of the isogonic information in the margin.

184. General

The aeronautical charts service provider shall ensure that the aeronautical data shown are kept to a minimum consistent with the use of the chart for visual navigation and the revision cycle.

185. Aerodromes

The aeronautical charts service provider shall:

(1) Show land and water aerodromes and heliports with their names, to the extent that they do not produce undesirable congestion on the chart, priority being given to those of greatest aeronautical significance.

(2) how aerodrome elevation, the lighting available, the type of runway surface and the length of the longest runway or channel, in abbreviated form for each aerodrome in conformity with the example in second schedule, is indicated provided they do not cause undesirable clutter on the chart; and

(3) Show and identify abandoned aerodromes which are still recognizable as aerodromes from the air as abandoned.

186. Obstacles

The aeronautical charts service provider shall show:

(1) Obstacles.

(2) Prominent transmission lines, permanent cable car installations and wind turbines, which are obstacles, when considered of importance to visual flight.

187. Prohibited, Restricted and Danger Areas

The aeronautical charts service provider shall show the prohibited, restricted and danger areas.

188. Air Traffic Services System

The aeronautical charts service provider shall show:

(1) significant elements of the air traffic services system including, where practicable, control zones, aerodrome traffic zones, control areas, flight information regions and other airspaces in which VFR flights operate together with the appropriate class of airspace;

(2) and properly identify the air defense identification zone, where appropriate

189. Radio Navigation Aids

The aeronautical charts service provider shall show radio navigation aids by the appropriate symbol and named, but excluding their frequencies, coded designators, times of operation and other characteristics unless any or all of the information shown is kept up to date by means of new editions of the chart.

190. Supplementary Information

The aeronautical charts service provider shall show:

(1) aeronautical ground lights together with their characteristics or their identifications or both;

(2) the marine lights on outer prominent coastal or isolated features of not less than 28 km (15 NM) visibility range where they are:

(a) not less distinguishable than more powerful marine lights in the vicinity;
(b) readily distinguishable from other marine or other types of lights in the vicinity of built-up coastal areas and
(c) the only lights of significance available.

CAHPTER XVII
AERONAUTICAL CHART — ICAO 1:500 000

191. Function

The Aeronautical Chart - 1: 500,000 shall provide information to satisfy the requirements of visual air navigation for low speed, short- or medium-range operations at low and intermediate altitudes.

192. Availability of Aeronautical Chart — ICAO 1:500 000

The aeronautical charts service provider shall make available Aeronautical Chart — ICAO 1:500 000 in the manner specified in these regulations for all areas delineated in fifth Schedule.

193. Scales

The aeronautical charts service provider shall:

(1) arrange the linear scales for kilometers and nautical miles in the following order:

(a) kilometers;
(b) nautical miles, with their zero points in the same vertical line is shown in the margin.

(2) Ensure that the length of the linear scale is not less than 200 mm (8 in) and

(3) Show a conversion scale in the margin.

194. Format

The aeronautical charts service provider shall:

(1) Ensure that the title and marginal notes is in English.

(2) Ensure that the information regarding the number of the adjoining sheets and the unit of measurement used to express elevation is located as to be clearly visible when the sheet is folded;

(3) Ensure that the method of folding is as follows.

(a) fold the chart on the long axis near the mid-parallel of latitude, face out, with the bottom part of the chart face upward;

(b) fold inward near the meridian; and

(c) fold both halves backward in accordion folds.

(4) Ensure that the sheets are quarter sheets of the World Aeronautical Chart - ICAO 1:1 000 000 whenever practicable.

(5) Include an appropriate index to adjacent sheets, showing the relationship between the two-chart series on the face of the chart or on the reverse side.

(6) Provide overlaps by extending the chart area on the top and right side beyond the area given on the index.

(7) Ensure that the overlap area in paragraph (f) contain all aeronautical, topographical, hydrographical and cultural information; and

(8) Ensure that the overlap extend up to 15 km (8 NM), if possible, but in any case, from the limiting parallels and meridians of each chart to the neat line.

195. Projection

The aeronautical charts service provider shall ensure that the:

(1) A conformal projection is used;

(2) The projection of the World Aeronautical Chart — 1:1 000 000 is used.

(3) The Parallels are shown at intervals of 30′.

(4) The meridians are shown at intervals of 30 ′.

(5) The graduation marks are shown at 1 ′ intervals along each whole degree meridian and parallel, extending away from the Greenwich Meridian and from the Equator and each 10 ′ interval is shown by a mark on both sides of the graticule line.

(6) The length of the graduation marks shall be approximately 1.3 mm (0.05 in) for the 1 ′ intervals, and 2 mm (0.08 in) for the 5 ′ intervals and 2 mm (0.08 in) extending on both sides of the graticule line for the 10 ′ intervals.

(7) The meridians and parallels shown are numbered in the borders of the chart;

(8) Each meridian and parallel is numbered within the body of the chart whenever this data is required operationally; and

(9) The name and basic parameters of the projection is indicated in the margin.

196. Identification

The aeronautical charts service provider shall:

(1) identify each sheet by a name of the principal town or of a main geographical feature appearing on the sheet;

(2) identify the sheets by the reference number of the corresponding World Aeronautical Chart —1:1 000 000 where applicable, with the addition of one or more of the following letter suffixes indicating the quadrant or quadrants:

Letter	Chart quadrant
A	North-West
B	North-East
C	South-East
D	South-West

197. Built-Up Areas

The aeronautical charts service provider shall:

(1) Select and show the cities, towns and villages according to their relative importance to visual air navigation; and

(2) Indicate the cities and towns of sufficient size by the outline of their built-up areas and not of their established city limits.

198. Railroads

The aeronautical charts service provider shall show–

(1) All railroads having landmark value; and

(2) The tunnels when they serve as prominent landmarks.

199. Highways and Roads

The aeronautical charts service provider shall:

(1) Road systems are shown in sufficient detail to indicate significant patterns from the air; and

(2) Roads not are shown in built-up areas unless they can be distinguished from the air as definite landmarks.

200. Landmarks

The aeronautical charts service provider shall show natural and cultural landmarks, such as bridges, prominent transmission lines, permanent cable car installations, wind turbines, mine structures, lookout towers, forts, ruins, levees, pipelines, rocks, bluffs, cliffs, sand dunes, isolated lighthouses and lightships when considered to be of importance for visual air navigation.

201. Political Boundaries

The aeronautical charts service provider shall show international boundaries and distinguish undermarketed and undefined boundaries by descriptive notes.

202. Hydrography

The aeronautical charts service provider shall:

(1) Show all water features compatible with the scale of the chart comprising shore lines, lakes, rivers and streams including those non-perennials in nature, salt lakes, glaciers and ice caps.

(2) Ensure that the tint covering large open water areas is kept very light; and

(3) Show reefs and shoals, including rocky ledges, tidal flats, isolated rocks, sand, gravel, stone and all similar areas by symbols when of significant landmark value.

203. Contours

The aeronautical charts service provider shall show:

(1) Contours, and the selection of intervals shall be governed by the requirement to depict clearly the relief features required in air navigation; and

(2) The values of the contours used.

204. Hypsometric Tints

The aeronautical charts service provider shall:

(1) When hypsometric tints are used, show the range of elevations for the tints; and

(2) Show the scale of the hypsometric tints used on the chart in the margin.

205. Spot Elevations

The aeronautical charts service provider shall:

(1) Show the spot elevations at selected critical points.

(2) Ensure that the elevations selected are the highest in the immediate vicinity and indicate the top of a peak and ridge;

(3) Show the elevations in valleys and at lake surface levels which are of navigational value and the position of each selected elevation shall be indicated by a dot;

(4) Indicate the elevation of the highest point on the chart and its geographical position to the nearest five minutes in the margin and

(5) Ensure that the spot elevation of the highest point on any sheet is cleared of hypsometric tinting.

206. Incomplete or Unreliable Relief

The aeronautical charts service provider shall:

(1) for the areas that have not been surveyed for contour information are labeled “Relief data incomplete”; and

(2) ensure that the charts on which spot elevations are unreliable bear a warning note prominently displayed on the face of the chart in the colour used for aeronautical information, as follows:

“Warning — The reliability of relief information on this chart is doubtful and elevations shall be used with caution.”

207. Escarpments

The aeronautical charts service provider shall show escarpments when they are prominent landmarks or when cultural detail is very sparse

208. Wooded Areas

The aeronautical charts service provider shall:

(1) Show the wooded areas.

(2) Indicate the approximate northern or southern limits of tree growth by a dashed black line where shown, and appropriate labels.

209. Date of Topographic Information

The aeronautical charts service provider shall show date of latest information on the topographic base is indicated in the margin.

210. Magnetic Variation

The aeronautical charts service provider shall:

(1) Show the isogonic lines and

(2) Indicate the date of the isogonic information in the margin.

211. General Information

The aeronautical charts service provider shall show aeronautical information consistent with the use of the chart and the revision cycle.

212. Aerodromes

The aeronautical charts service provider shall show:

(1) Land and water aerodromes and heliports with their names, to the extent that they do not produce undesirable congestion on the chart, priority being given to those of greatest aeronautical significance;

(2) Aerodrome elevation, the lighting available, the type of runway surface and the length of the longest runway or channel, in abbreviated form for each aerodrome in conformity with the example in second schedule, provided they do not cause undesirable clutter on the chart, are indicated; and

(3) Identify abandoned aerodromes which are still recognizable as aerodromes from the air as abandoned.

213. Obstacles

The aeronautical charts service provider shall show:

(1) obstacles; and

(2) prominent transmission lines, permanent cable car installations and wind turbines, which are obstacles when considered of importance to visual flight.

214. Prohibited, Restricted and Danger Areas

The aeronautical charts service provider shall show prohibited, restricted and danger areas.

215. Air Traffic Services System

The aeronautical charts service provider shall show:

(1) Significant elements of the air traffic services system including, control zones, aerodrome traffic zones, control areas, flight information regions and other airspaces in which VFR flights operate together with the appropriate class of airspace, where practicable; and

(2) Properly identify air defence identification zone (ADIZ) where appropriate.

216. Radio Navigation Aids

The aeronautical charts service provider shall show radio navigation aids by the appropriate symbol and named, but excluding their frequencies, coded designators, times of operation and other characteristics unless any or all of this information is kept up to date by means of new editions of the chart.

217. Supplementary Information

The aeronautical charts service provider shall show:

(1) Aeronautical ground lights together with their characteristics or their identifications or both and

(2) Marine lights on outer prominent coastal or isolated features of not less than 28 km (15 NM) visibility range, where they are:

(a) not less distinguishable than more powerful marine lights in the vicinity;
(b) readily distinguishable from other marine or other types of lights in the vicinity of built-up coastal areas;
(c) the only lights of significance available.

CHAPTER XVIII
AERONAUTICAL NAVIGATION CHART - ICAO SMALL SCALE

218. Function

The aeronautical navigation chart – small scale shall:

(1) Serve as an air navigation aid for flight crews of long-range aircraft at high altitudes;

(2) Provide selective checkpoints over extensive ranges for identification at high altitudes and speeds, which are required for visual confirmation of position;

(3) Provide for continuous visual reference to the ground during long-range flights over areas lacking radio or other electronic navigation aids, or over areas where visual navigation is preferred or becomes necessary;

(4) Provide a general-purpose chart series for long-range flight planning and plotting.

219. Availability of Aeronautical Navigation Chart — Small Scale

The aeronautical charts service provider shall make available Aeronautical Navigation Chart — Small Scale in the manner specified in these regulations for all areas delineated in fifth schedule.

220. Coverage and Scale

The aeronautical charts service provider shall ensure that:

(1) The Aeronautical Navigation Chart — Small Scale provides as a minimum, complete coverage of the major land masses of the world;

(2) Ensure that the scale is in the range of 1:2 000 000 to 1:5 000 000;

(3) The scale of the chart is substituted in the title for the words “Small Scale”;

(4) The Linear scales for kilometers and nautical miles arranged in the following order:

(a) kilometers,
(b) nautical miles, with their zero points in the same vertical line are shown in the margin;

(5) the length of the linear scale is not less than 200 mm (8 in); and

(6) a conversion scale in meter or feet is shown in the margin.

221. Format

The aeronautical charts service provider shall ensure that the:

(1) Title and marginal notes are in English; and

(2) Information regarding the number of the adjoining sheets and the unit of measurement to express elevations is located as to be clearly visible when the sheet is folded.

222. Projection

The aeronautical charts service provider shall ensure that:

(1) A conformal projection is used;

(2) The name and basic parameters of the projection is shown in the margin;

(3) The parallels are shown at intervals of 1°;

(4) The graduations on the parallels are shown at sufficiently close intervals compatible with the latitude and the scale of the chart;

(5) Meridians are shown at intervals compatible with the latitude and the scale of the chart.

(6) The graduations on the meridians are shown at intervals not exceeding 5′ ;

(7) The graduation marks extend away from the Greenwich Meridian and from the Equator;

(8) All meridians and parallels shown are numbered in the borders of the chart; and

(9) In addition, when required, meridians and parallels are numbered within the body of the chart in such a manner that they can be readily identified when the chart is folded.

223. Built-Up Areas

The aeronautical charts service provider shall:

(1) Select and show cities, towns and villages according to their relative importance to visual air navigation; and

(2) Indicate cities and towns of sufficient size by the outline of their built-up areas and not of their established city limits.

224. Railroads

The aeronautical charts service provider shall show:

(1) All railroads having landmark value; and

(2) Important tunnels.

225. Highways and Roads

The aeronautical charts service provider shall:

(1) Show road systems in sufficient detail to indicate significant patterns from the air; and

(2) Not show roads in built-up areas unless they can be distinguished from the air as definite landmarks;

226. Landmarks

The aeronautical charts service provider shall show natural and cultural landmarks, such as bridges, prominent transmission lines, permanent cable car installations, mine structures, forts, ruins, levees, pipelines, rocks, bluffs, cliffs, sand dunes, isolated lighthouses and lightships, when considered to be of importance for visual air navigation.

227. Political Boundaries

The aeronautical charts service provider shall show international boundaries and distinguish the undermarketed including undefined boundaries by descriptive notes.

228. Hydrography

The aeronautical charts service provider shall:

(1) Show all water features compatible with the scale of the chart comprising shore lines, lakes, rivers and streams including that non-perennial in nature, salt lakes, glaciers and ice caps;

(2) Ensure that the tint covering large open water areas is kept very light; and

(3) Show reefs and shoals, including rocky ledges, tidal flats, isolated rocks, sand, gravel, stone and all similar areas by symbols when of significant landmark value.

229. Contours

The aeronautical charts service provider shall show:

(1) Contours, and the selection of intervals are governed by the requirement to depict clearly the relief features required in air navigation; and

(2) Values of the contours used.

230. Hypsometric Tints

The aeronautical charts service provider shall show:

(1) Range of elevations for the tints when hypsometric tints are used;

(2) Scale of the hypsometric tints used on the chart in the margin.

231. Spot Elevations

The aeronautical charts service provider shall:

(1) Show spot elevations at selected critical points.

(2) Ensure that the elevations selected are the highest in the immediate vicinity and indicate the top of a peak or ridge.

(3) Show elevations in valleys and at lake surface levels which are of value to visual air navigation and the position of each selected elevation shall be indicated by a dot.

(4) Indicate the elevation of the highest point on the chart and its geographical position to the nearest five minutes in the margin; and

(5) Ensure that spot elevation of the highest point in any sheet is cleared of hypsometric tinting.

232. Incomplete or Unreliable Relief

The aeronautical charts service provider shall:

(1) for areas that have not been surveyed for contour information are label "Relief data incomplete".

(2) ensure that the charts on which spot elevations are unreliable bear a warning note prominently displayed on the face of the chart in the colour used for aeronautical information, as follows:

"Warning — the reliability of relief information on this chart is doubtful and elevations shall be used with caution."

233. Escarpments

The aeronautical charts service provider shall show escarpments when they are prominent landmarks or when cultural detail is very sparse.

234. Wooded Areas

The aeronautical charts service provider shall show wooded areas of large extent.

235. Date of Topographic Information

The aeronautical charts service provider shall show the date of latest information on the topographic base is indicated in the margin

236. Colours

The aeronautical charts service provider shall:

(1) Use the subdued colours for the chart background to facilitate plotting and

(2) Ensure good colour contrast to emphasize features important to visual air navigation.

237. Magnetic Variation

The aeronautical charts service provider shall:

(1) Show isogonic lines and

(2) Indicate date of isogonic information in the margin.

238. Aerodromes

The aeronautical charts service provider shall show land and water aerodromes and heliports with their names, to the extent that they do not produce undesirable congestion on the chart, priority being given to those of greatest aeronautical significance.

239. Obstacles

The aeronautical charts service provider shall show obstacles.

240. Prohibited, Restricted and Danger Areas

The aeronautical charts service provider shall show prohibited, restricted and danger areas when considered to be of importance to air navigation.

241. Air Traffic Services System

The aeronautical charts service provider shall show:

(1) Significant elements of the air traffic services system when considered to be of importance to air navigation; and

(2) Properly identify air defence identification zone (ADIZ) where appropriate.

CHAPTER XIX
PLOTTING CHART — ICAO

242. Function

The plotting chart shall provide a means of maintaining a continuous flight record of the aircraft position by various fixing methods and dead reckoning in order to maintain an intended flight path.

243. Availability of Plotting Chart

The aeronautical charts service provider shall make available the plotting chart – ICAO in the manner prescribed in these regulations to cover major air routes over oceanic areas and sparsely settled areas used by international civil aviation.

244. Coverage and Scale

The aeronautical charts service provider shall ensure that the:

(1) Hart for a particular region covers major air routes and their terminals on a single sheet, where practicable;

(2) Scale is governed by the area to be covered.

245. Format

The Aeronautical charts service provider shall ensure that the sheet is of a size that can be adapted for use on a navigator’s plotting table.

246. Projection

The aeronautical charts service provider shall:

(1) Use a conformal projection on which a straight line approximates a great circle;

(2) Show the parallels and meridians;

(3) Arrange the intervals to permit accurate plotting to be carried out with a minimum of time and effort;

(4) Show the graduation marks at consistent intervals along an appropriate number of parallels and meridians and the interval selected, regardless of scale, minimizes the amount of interpolation required for accurate plotting; and

(5) Ensure that the parallels and meridians are numbered so that a number appears at least once every 15 cm (6 in) on the face of the chart.

247. Identification

The Aeronautical charts service provider shall identify each sheet is identified by chart series and number.

248. Culture and Topography

The aeronautical charts service provider shall–

(1) Show generalized shore lines of all open water areas, large lakes and rivers;

(2) Show spot elevations for selected features constituting a hazard to air navigation;

(3) Emphasize hazardous or prominent relief features.

249. Magnetic Variation

The aeronautical charts service provider shall show:

(1) Isogonals at consistent intervals throughout the chart and the interval selected, regardless of scale, minimizes the amount of interpolation required;

(2) Date of the isogonic information.

250. Aeronautical Data

(1) The aeronautical charts service provider shall show:

(1) Aerodromes regularly used by international commercial air transport together with their names.
(2) Selected radio aids to navigation that will contribute to position-finding together with their names and identifications.
(3) Lattices of long-range electronic aids to navigation, as required.
(4) Boundaries of flight information regions, control areas and control zones necessary to the function of the chart.
(5) Designated reporting points necessary to the function of the chart.
(6) Ocean station vessels.

(2) The aeronautical charts service provider shall show aeronautical ground lights and marine lights useful for air navigation where other means of navigation are non-existent.

CHAPTER XXX
ELECTRONIC AERONAUTICAL CHART DISPLAY — ICAO

251. Function

The Electronic Aeronautical Chart Display — ICAO, with adequate back-up arrangements and in compliance with the requirements of Civil Aviation (Operations of aircraft) Regulations for charts, shall enable flight crews to execute, in a convenient and timely manner, route planning, route monitoring and navigation by displaying the required information.

252. Information Available for Display

The aeronautical charts service provider shall ensure that the Electronic Aeronautical Chart Display — ICAO is capable of displaying all aeronautical, cultural and topographic information required by part V and part IX through to part XIX

253. Display Categories

The aeronautical charts service provider shall:

(1) Subdivide the information available for display into the following categories-

(a) basic display information, permanently retained on the display and consisting of the minimum information essential for the safe conduct of flight; and

(b) other display information, which may be removed from the display or displayed individually on demand, and consisting of information not considered essential for the safe conduct of flight.

(2) Ensure that adding or removing other display information is a simple function but not possible to remove information contained in the basic display.

254. Display Mode and Generation of Neighboring Area

The Aeronautical charts service provider shall ensure that:

(1) The Electronic Aeronautical Chart Display — ICAO is capable of continuously plotting the aircraft's position in a true motion mode where reset and generation of the surrounding area takes place automatically.

(2) It is possible manually to change the chart area and the position of the aircraft relative to the edge of the display.

255. Scale

The Aeronautical charts service provider shall ensure that it is possible to vary the scale at which a chart is displayed.

256. Symbols

The Aeronautical charts service provider shall:

(1) Use the symbols that conform to those specified for electronic charts in the second schedule - ICAO Chart Symbols except where it is desired to show items for which no ICAO chart symbol is provided;

(2) In cases where no ICAO chart symbols are provided, chose electronic chart symbols which:

(a) employ a minimum use of lines, arcs and area fills;
(b) do not cause confusion with any existing aeronautical chart symbol;
(c) do not impair the legibility of the display.

257. Display Hardware

The Aeronautical charts service provider shall ensure that the:

(1) Effective size of the chart presentation is sufficient to display the information required by regulation 252 without excessive scrolling;

(2) Display has the capabilities required to accurately portray required elements of second schedule — ICAO Chart Symbols;

(3) Method of presentation ensures that the displayed information is clearly visible to the observer in the conditions of natural and artificial light experienced in the cockpit; and

(4) Display luminance is adjustable by the flight crew.

258. Provision and Updating of Data

The Aeronautical charts service provider shall ensure that:

(1) The provision and updating of data for use by the display is in conformance with the aeronautical data quality system requirements;

(2) The display is capable of automatically accepting authorized updates to existing data and means of ensuring that authorized data and all relevant updates to that data have been correctly loaded into the display is provided;

(3) The display is capable of accepting updates to authorized data entered manually with simple means for verification prior to final acceptance of the data and updates entered manually are distinguishable on the display from authorized data and its authorized updates and shall not affect display legibility;

(4) A record is kept of all updates, including date and time of application;

(5) The display allows the flight crew to display updates so that the flight crew may review the contents of the updates and determine that they have been included in the system.

259. Performance Tests, Malfunction Alarms and Indications

The aeronautical charts service provider shall provide:

(1) A means for carrying out on-board tests of major functions and in case of a failure, the test displays information to indicate which part of the system is at fault.

(2) A suitable alarm or indication of system malfunction.

260. Back-Up Arrangements

The aeronautical charts service provider shall provide back-up arrangements to ensure safe navigation in case of a failure of the Electronic Aeronautical Chart Display — ICAO, including:

(1) Facilities enabling a safe takeover of display functions in order to ensure that a failure does not result in a critical situation; and

(2) A back-up arrangement facilitating the means for safe navigation of the remaining part of the flight.

CHAPTER XXI
ATC SURVEILLANCE MINIMUM ALTITUDE CHART — ICAO

261. Function

The aeronautical charts service provider shall ensure that:

(1) The ATC Surveillance Minimum Altitude chart provides information that will enable flight crews to monitor and cross-check altitudes assigned by a controller using an ATS surveillance system;

(2) A note indicating that the chart may only be used for cross-checking of altitudes assigned while the aircraft is identified is prominently displayed on the face of the chart.

262. Availability

The aeronautical charts service provider shall make available the ATC Surveillance Minimum Altitude Chart — ICAO, in the manner specified in accordance with the provisions of these regulations, where vectoring procedures are established and minimum vectoring altitudes cannot be shown adequately on the Area Chart — ICAO, Standard Departure Chart — Instrument (SID) — ICAO or Standard Arrival Chart — Instrument (STAR) — ICAO.

263. Coverage and Scale

The aeronautical charts service provider shall:

(1) Ensure the coverage of the chart is sufficient to effectively show the information associated with vectoring procedures;

(2) Draw the chart to scale;

(3) The chart is drawn to the same scale as the associated Area Chart — ICAO.

264. Projection

The aeronautical charts service provider shall:

(1) Use a conformal projection on which a straight line approximates a geodesic line;

(2) Place the graduation marks at consistent intervals along the neat lines, as appropriate

265. Identification

The Aeronautical charts service provider shall identify chart by the name of the aerodrome for which the vectoring procedures are established or, when procedures apply to more than one aerodrome, the name associated with the airspace portrayed.

266. Culture and Topography

The Aeronautical charts service provider shall show:

(1) Generalized shorelines of all open water areas, large lakes and rivers except where they conflict with data more applicable to the function of the chart;

(2) Appropriate spot elevations and obstacles.

267. Magnetic Variation

The Aeronautical charts service provider shall show the average magnetic variation of the area covered by the chart to the nearest degree.

268. Bearings, Tracks and Radials

The aeronautical charts service provider shall:

(1) Ensure that the Bearings, tracks and radials are magnetic;

(2) Clearly indicate the bearings, tracks or radials, where bearings, tracks or radials are given with reference to True North or Grid North and identify the reference grid meridian, when Grid North is used.

269. Aerodromes

The aeronautical charts service provider shall ensure that:

(1) All aerodromes that affect the terminal routings are shown and where appropriate, a runway pattern symbol is used;

(2) The elevation of the primary aerodrome to the nearest meter or foot is shown.

270. Prohibited, Restricted and Danger Areas

The Aeronautical charts service provider shall depict prohibited, restricted and danger areas with their identification.

271. Air Traffic Services System

The aeronautical charts service provider shall show:

(1) components of the established air traffic services system on the chart including:

(a) relevant radio navigation aids together with their identifications;

(b) lateral limits of relevant designated airspace;
(c) relevant significant points associated with standard instrument departure and arrival procedures;
(d) transition altitude, where established;
(e) information associated with vectoring including:
(i) minimum vectoring altitudes to the nearest higher 50 m or 100 ft, clearly identified;
(ii) lateral limits of minimum vectoring altitude sector s normally defined by bearings and radials to/from radio navigation aids to the nearest degree or, if not practicable, geographical coordinates in degrees, minutes and seconds and shown by heavy lines so as to clearly differentiate between established sectors;
(iii) distance circles at 20-km or 10-NM intervals or, when practicable, 10-km or 5-NM intervals shown as fine dashed lines with the radius indicated on the circumference and centred on the identified aerodrome main VOR radio navigation aid or, if not available, on the aerodrome/heliport reference point;
(iv) notes concerning correction for low temperature effect, as applicable;
(v) communications procedures including call sign(s) and channel(s) of the ATC unit(s) concerned.

(2) A textual description of relevant communication failure procedures is provided and whenever feasible, on the chart or on the same page that contains the chart.

CHAPTER XXII
GENERAL PROVISIONS

272. Use and Retention of Approvals and Records

(1) A person shall not:

(a) use any approval, permission, exemption or other document issued or required by or under these Regulations which has been forged, altered, revoked or suspended or to which the person is not entitled to use;
(b) forge or alter any approval, permission, exemption or other document issued or required under these Regulations;
(c) lend any approval, permission, exemption or other document issued or required under these Regulations to any other person;
(d) make any false representation for the purpose of procuring for himself or any other person the issue, renewal or variation of an approval, permission or exemption or other document.

(2) A person shall not, during the period for which a record is required under these Regulations to be preserved:

(a) mutilate, alter, render illegible or destroy any records, or any entry made in the record;

(b) make, procure or assist in the making of any false entry in an approval or record; or

(c) omit to make a material entry in an approval or record.

(3) A record required to be maintained under these Regulations shall be recorded in a permanent and indelible material.

(4) A person shall not purport to issue an approval or exemption for the purpose of these Regulations unless that person is authorized to do so.

(5) The Authority may suspend or cancel an approval of an aeronautical charts service provider who contravenes any provision of these Regulations

273. Deviation from Regulation and Procedures

Any deviation from a requirement or procedure under these Regulations shall be put in an endorsement on the applicable Manual of Air Navigation Services Operations (MANSPOS).

274. Inspections and Audits

The Authority shall:

(1) Carry out inspections and audits as may be necessary for the purpose of verifying compliance with theseRegulations;

(2) Carry out inspections and audits of any documents and records of aeronautical charts service provider, which may be necessary to determine compliance with the requirements of these Regulations.

(3) Verify and approve the aeronautical charts for use

275. Staff Training and Competence Requirements

The aeronautical charts service provider shall:

(1) Develop job description for all technical staff involved in aeronautical charts services and aeronautical charts production;

(2) Develop training program for aeronautical charts technical staff, which covers initial on-the-job, recurrent and advanced or specialized training;

(3) Develop annual training plan detailing and prioritizing what type of training will be provided and this training shall cover recurrent training;

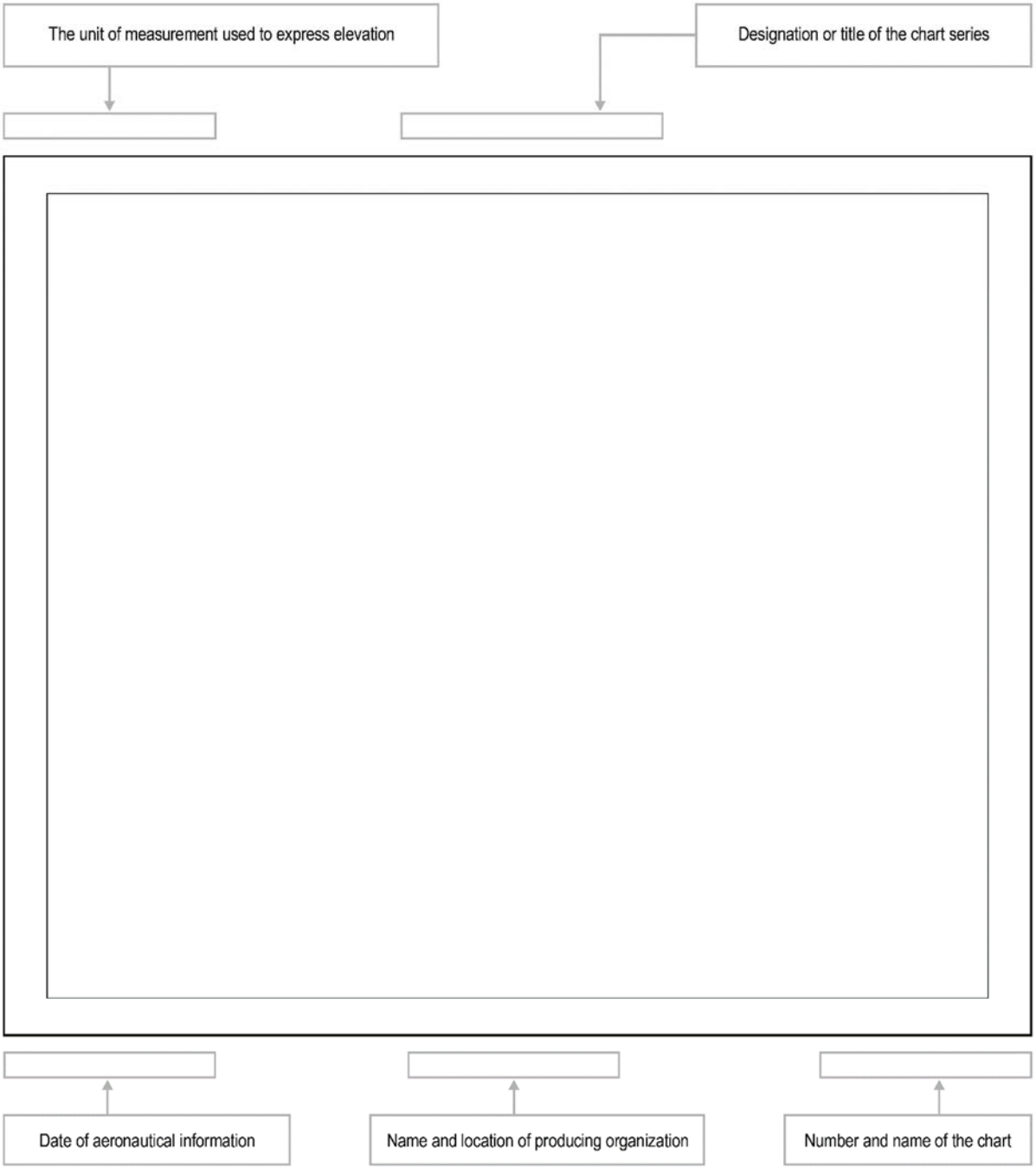
(4) Prior to assigning tasks and responsibilities to new aeronautical charts technical staff, ensure that they have satisfactorily completed initial and on-job-training in accordance with the training programme; and

(5) Develop a system for the maintenance of training records for all aeronautical charts technical staff.

FIRST SCHEDULE

Regulation 8

MARGINAL LAYOUT



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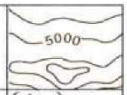
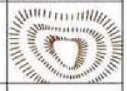
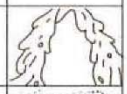
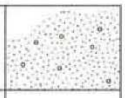
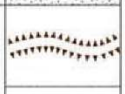
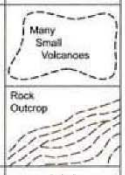
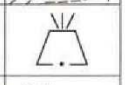
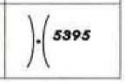
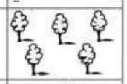
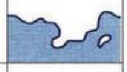
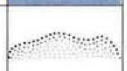
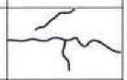
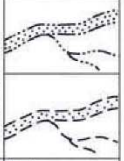
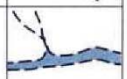
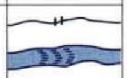
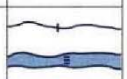
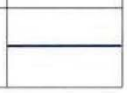
1	Contours	
2	Approximate contours	
3	Relief shown by hachures	
4	Bluff, cliff or escarpment	
5	Lava flow	
6	Sand dunes	
7	Sand area	

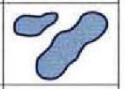
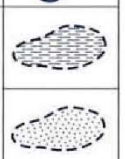
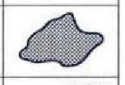
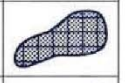
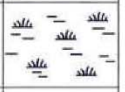
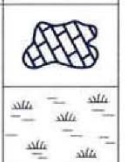
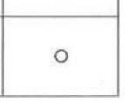
8	Gravel		
9	Levee or esker	Alternative	
10	Unusual land features appropriately labelled		
	Active volcano		
11	Mountain pass		

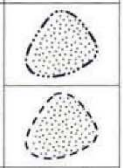
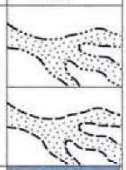
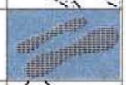
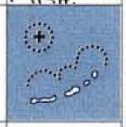
12	Highest elevation on chart	Alternative	17456 .17456
13	Spot elevation		.6397 .8975
14	Spot elevation (of doubtful accuracy)		.6370±
15	Coniferous trees		
16	Other trees		
17	Palms		

18	Areas not surveyed for contour information or relief data incomplete	Caution

HYDROGRAPHY

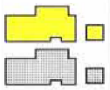
19	Shore line (reliable)		
20	Shore line (unreliable)		
21	Tidal flats		
22	Coral reefs and ledges		
23	Large river (perennial)		
24	Small river (perennial)		
25	Rivers and streams (non-perennial)	Alternative	
26	Rivers and streams (unsurveyed)		
27	Rapids		
28	Falls		
29	Canal		

30	Abandoned canal *Note.— Dry canal having landmark value.*			
31	Lakes (perennial)			
32	Lakes (non-perennial)	Alternative		
33	Salt lake			
34	Salt pans (evaporator)			
35	Swamp			
36	Rice field	Alternative		
37	Spring, well or water hole		perennial	
			intermittent	

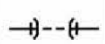
38	Reservoir		
39	Dry lake bed	Alternative	
40	Wash	Alternative	
41	Shoals		
42	Glaciers and ice caps		
43	Danger line (2 m or one fathom line)		
44	Charted isolated rock		+
45	Rock awash		
46	Unusual water features appropriately labelled		

CULTURE

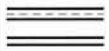
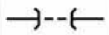
BUILT-UP AREAS

47	City or large town	
48	Town	
49	Village	
50	Buildings	

RAILROADS

51	Railroad (single track)	
52	Railroad (two or more tracks)	
53	Railroad (under construction)	
54	Railroad bridge	
55	Railroad tunnel	
56	Railroad station	

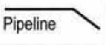
HIGHWAYS AND ROADS

57	Dual highway	
58	Primary road	
59	Secondary road	
60	Trail	
61	Road bridge	
62	Road tunnel	

MISCELLANEOUS

63	Boundaries (international)	
64	Outer boundaries	
65	Fence	
66	Telegraph or telephone line (when a landmark)	
67	Dam	
68	Ferry	

MISCELLANEOUS (Cont.)

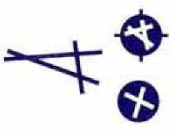
69	Pipeline	
70	Oil or gas field	
71	Tank farms	
72	Nuclear power station	
73	Coast guard station	
74	Lookout tower	
75	Mine	
76	Forest ranger station	
77	Race track or stadium	
78	Ruins	
79	Fort	
80	Church	
81	Mosque	
82	Pagoda	
83	Temple	

AERODROMES

84	Civil	Land	
85	Civil	Water	
86	Military	Land	
87	Military	Water	

88	Joint civil and military Land	
89	Joint civil and military Water	
90	Emergency aerodrome or aerodrome with no facilities	
91	Abandoned or closed aerodrome	

92	Sheltered anchorage	
93	Aerodrome for use on charts on which aerodrome classification is not required e.g. Enroute Charts	
94	Heliport *Note.— Aerodrome for the exclusive use of helicopters*	

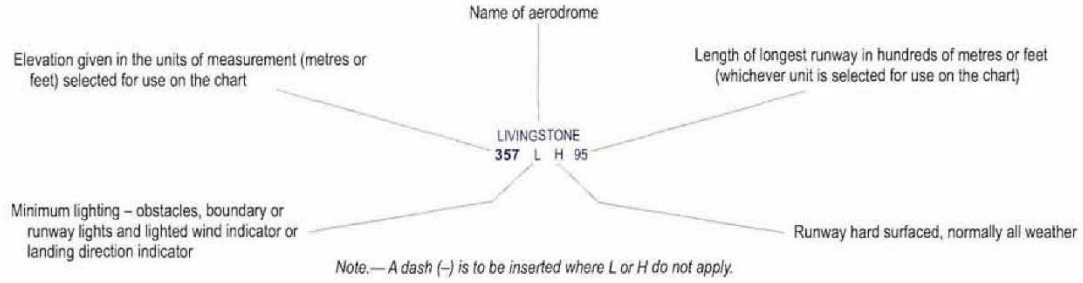
95	*Note.— Where required by the function of the chart, the runway pattern of the aerodrome may be shown in lieu of the aerodrome symbol, for example:*	

AERODROMES *(Cont.)*

AERODROME DATA IN ABBREVIATED FORM WHICH MAY BE IN ASSOCIATION WITH AERODROME SYMBOLS

(Reference: 16.9.2.2 and 17.9.2.2)

96



Note.— A dash (–) is to be inserted where L or H do not apply.

AERODROME SYMBOLS FOR APPROACH CHARTS

97	Aerodromes affecting the traffic pattern on the aerodrome on which the procedure is based	
98	The aerodrome on which the procedure is based	

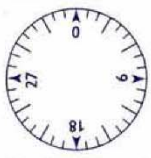
RADIO NAVIGATION AIDS*

99	Basic radio navigation aid symbol *Note.— This symbol may be used with or without a box to enclose the data.*		⊙
100	Non-directional radio beacon	NDB	
101	VHF omnidirectional radio range	VOR	
102	Distance measuring equipment	DME	
103	Collocated VOR and DME radio navigation aids	VOR/DME	
104	DME distance	Distance in kilometres (nautical miles) to DME → 15 km Identification of radio navigation aid → KAV	
105	VOR radial	Radial bearing from, and identification of, VOR	R 090 KAV
106	UHF tactical air navigation aid	TACAN	

107	Collocated VOR and TACAN radio navigation aids	VORTAC	
108	Instrument landing system	ILS	PLAN VIEW (B, Y) Electronic — FRONT COURSE BACK COURSE PROFILE Electronic — GLIDE PATH
109	Radio marker beacon	Elliptical	
		Bone Shape	

Note.— Marker beacon may be shown by outline, or stipple, or both.

110 Compass rose
To be orientated on the chart in accordance with the alignment of the station (normally Magnetic North)



Note.— Additional points of compass may be added as required.

Compass rose to be used as appropriate in combination with the following symbols:

VOR	⊙
VOR/DME	
TACAN	
VORTAC	

**Note.— Guidance material on the presentation of radio navigation aid data is given in the* Aeronautical Chart Manual *(Doc 8697).*

AIR TRAFFIC SERVICES

111	Flight information region	FIR	
112	Aerodrome traffic zone	ATZ	
113	Control area Airway Controlled route	CTA AWY	Alternative
114	Uncontrolled route		
115	Advisory airspace	ADA	
116	Control zone	CTR	

117	Air defence identification zone	ADIZ	ADIZ
118	Advisory route	ADR	Alternative
119	Visual flight path	compulsory with radio communication requirement	R
		compulsory, without radio communication requirement	R
		recommended	
120	Scale-break (on ATS route)		Alternative

Significant Point Functionality

		Significant point depiction for conventional navigation		Significant point depiction for area navigation			
	REPORTING FLY-BY/FLY-OVER	On request (NA)	Compulsory (NA)	On request fly-by	Compulsory fly-by	On request flyover	Compulsory flyover
121 Basic Symbols with functionality	VFR reporting point	△	▲	△	▲	△	▲
	Intersection INT	△	▲	△	▲	△	▲
	VORTAC						
	TACAN						
	VOR						
	VOR/DME						
	NDB						
	Waypoint WPT	Not used	Not used				

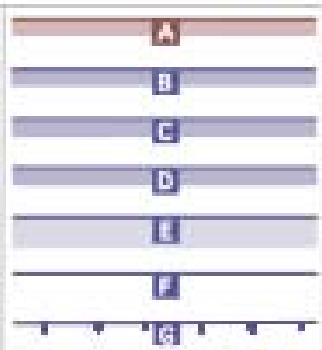
For details on use and meaning of these symbols, refer to paragraph 2.4

122	Change-over point COP To be superimposed on the appropriate route symbol at right angles to the route	26 / 36	123	ATS/MET reporting point MRP	Compulsory On request	124	Final approach fix FAF	

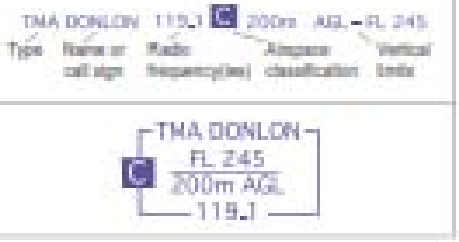
AIR TRAFFIC SERVICES (cont.)

123	Procedure altitudes/flight levels	Altitude/flight level 'window'	17 000 10 000	FL 320 FL 080
		'At or above' altitude/flight level	7 800	FL 070
		'At or below' altitude/flight level	9 000	FL 090
		'At' altitude/flight level	3 000	FL 030
		'Recommended' altitude/flight level	5 800	FL 060
		'Expected' altitude/flight level	Expect 5 000	Expect FL 050

AIRSPACE CLASSIFICATIONS

126	Airspace classifications	

Aeronautical data in abbreviated form to be used in association with airspace classification symbols

127	Example	

AIRSPACE RESTRICTIONS

128	Restricted airspace (prohibited, restricted or danger area)	Common boundary of two areas
	Note — The angle and density of hatchings may be varied according to scale and the size, shape and orientation of the area.	
129	International boundary closed to passage of aircraft except through air corridor	

OBSTACLES

130	Obstacle	
131	Lighted obstacle	
132	Group obstacles	
133	Lighted group obstacles	

134	Exceptionally high obstacle (optional symbol)	
135	Exceptionally high obstacle – lighted (optional symbol) Note — For obstacles having a height of the order of 300 m (1 000 ft) above terrain.	
136	Elevation of top (datum) → 127 (125) ← Height above specified datum (upright figure in parentheses)	

MISCELLANEOUS

137	Prominent transmission line	
138	Isogonic line or isogonal	3° E
139	Ocean station vessel (normal position)	

140	Wind turbine — unlighted and lighted	
141	Wind turbines — minor group and group in major area, lighted	

VISUAL AIDS

142	Marine light *Note 2.– Characteristics are to be indicated as follows:*	F	*Note 1.– Marine alternating lights are red and white unless otherwise indicated. Marine lights are white unless colours are stated.* Alt Alternating; B Blue; F Fixed; Fl Flashing; G Green; Gp Group; Occ Occulting; R Red; SEC Sector; sec Second; (U) Unwatched; W White
143	Aeronautical ground light	Electronic	
144	Lightship		

SYMBOLS FOR AERODROME/HELIPORT CHARTS

145	Hard surface runway	
146	Pierced steel plank or steel mesh runway	
147	Unpaved runway	
148	Stopway SWY	
149	Taxiways and parking areas	
150	Helicopter alighting area on an aerodrome	H
151	Aerodrome reference point ARP	
152	VOR check-point	
153	Runway visual range (RVR) observation site	

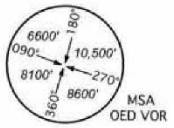
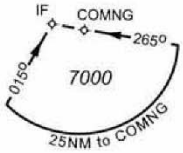
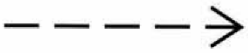
154	Point light	
155	Obstacle light	
156	Landing direction indicator (lighted)	T
157	Landing direction indicator (unlighted)	T
158	Stop bar	
159	Runway-holding position *Note.– For application, see Annex 14, Volume I, 5.2.10.*	Pattern A Pattern B
160	Intermediate holding position *Note.– For application, see Annex 14, Volume I, 5.2.11.*	
161	Hot spot *Note.– Hot spot location to be circled.*	

SYMBOLS FOR AERODROME OBSTACLE CHARTS - TYPE A, B AND C

		Plan	Profile
162	Tree or shrub		Identification number
163	Pole, tower, spire, antenna, etc.		
164	Building or large structure		
165	Railroad		
166	Transmission line or overhead cable		

		Plan	Profile
167	Terrain penetrating obstacle plane		
168	Escarpment		
169	Stopway SWY		
170	Clearway CWY		

ADDITIONAL SYMBOLS FOR USE ON PAPER AND ELECTRONIC CHARTS

	PLAN VIEW		Electronic
171	Minimum sector altitude *Note.— This symbol may be modified to reflect particular sector shapes.*	MSA	
172	Terminal arrival altitude *Note.— This symbol may be modified to reflect particular TAA shapes.*	TAA	
173	Holding pattern		
174	Missed approach track		

PROFILE

175	Runway	
176	Radio navigation aid (type of aid and its use in the procedure to be annotated on top of the symbol)	
177	Radio marker beacon (type of beacon to be annotated on top of the symbol)	
178	Collocated radio navigation aid and marker beacon (type of aid to be annotated on top of the symbol)	
179	DME fix (distance from DME and the fix use in the procedure to be annotated on top of the symbol)	
180	Collocated DME fix and marker beacon (distance from DME and the type of beacon to be annotated on top of the symbol)	

THIRD SCHEDULE

Regulation 16

COLOUR GUIDE

CHART SYMBOLS

Culture, except highways and roads; outlines of large cities, grids and graticules; spot elevations; danger lines and off-shore rocks; names and lettering except for aeronautical and hydrographic features		BLACK
Built-up areas of cities		BLACK Stipple
Highways and roads	Optional colours	BLACK Half-tone
		RED
Built-up areas for cities (alternative to black stipple)		YELLOW
Contours and topographic features: Items 1 through 10 of Appendix 2 Hydrographic features: Items 39 through 41 of Appendix 2		BROWN
Shore lines, drainage, rivers, lakes, bathymetric contours and other hydrographic features including their names or description		BLUE
Open water areas		BLUE Half-tone
Salt lakes and salt pans		BLUE Stipple
Large non-perennial rivers and non-perennial lakes		BLUE Stipple
Aeronautical data, except for Enroute and Area Charts — ICAO, where different colours may be required. Both contours may be used on the same sheet but, where only one colour is used, dark blue is preferred	Optional colours	MAGENTA
		DARK BLUE

CHART SYMBOLS *(Cont.)*

Woods		GREEN
Areas which have not been surveyed for contour information or relief data are incomplete	Optional colours	GOLDEN BUFF WHITE

HYPSOMETRIC TINTS

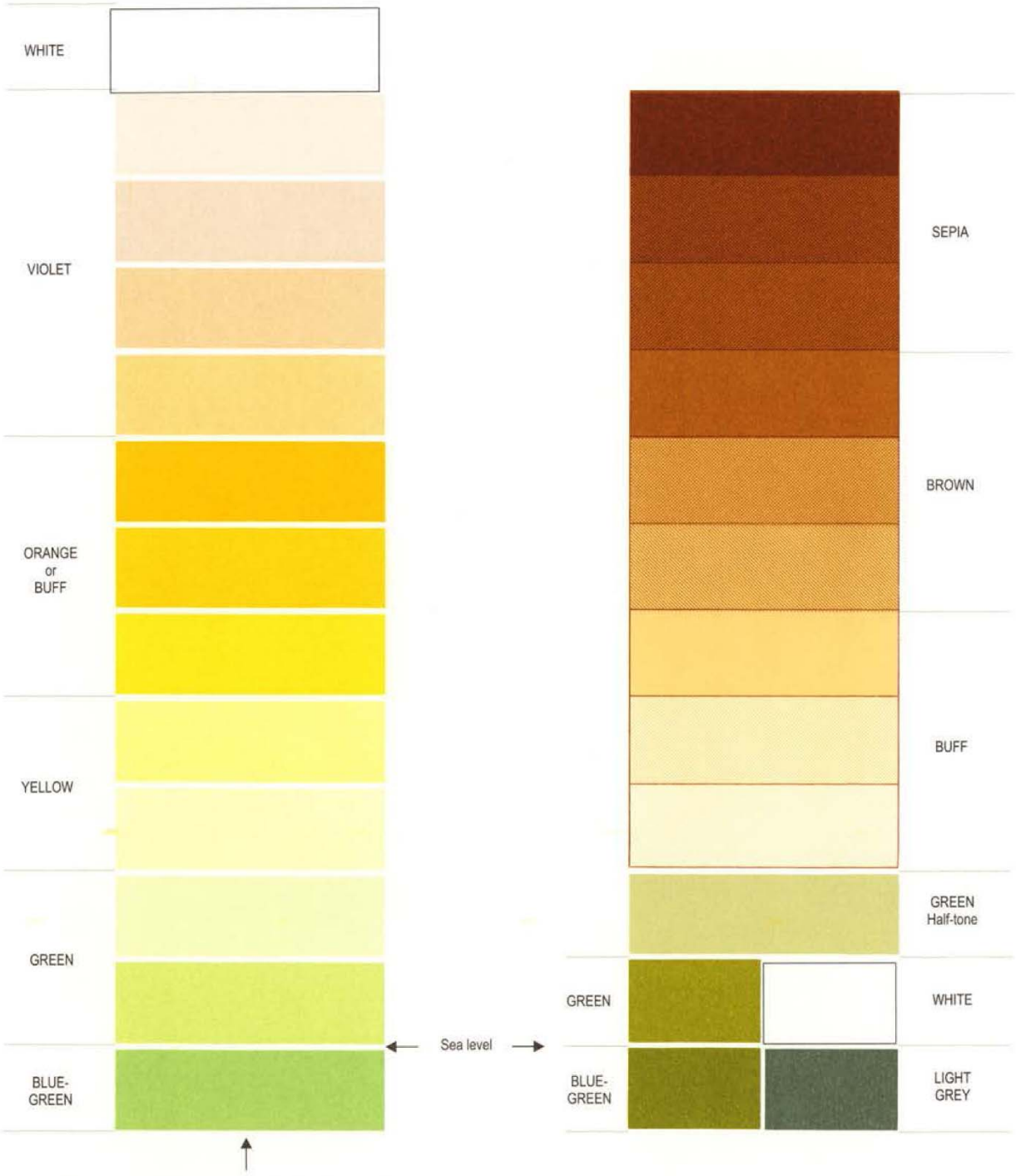
	WHITE	Tint for extreme elevations		SEPIA
	VIOLET			
	ORANGE or BUFF	Tint for higher range elevations		BROWN
	YELLOW	Tint for middle range elevations		BUFF
	GREEN	Tint for lower range elevations	Optional colours	GREEN WHITE
	BLUE-GREEN	Tint for areas below sea level	Optional colours	BLUE-GREEN LIGHT GREY

Note.— Basic tints are identical to those specified for the International Map of the World.

FOURTH SCHEDULE

Regulation 17

HYPOSOMETRIC TINT GUIDE

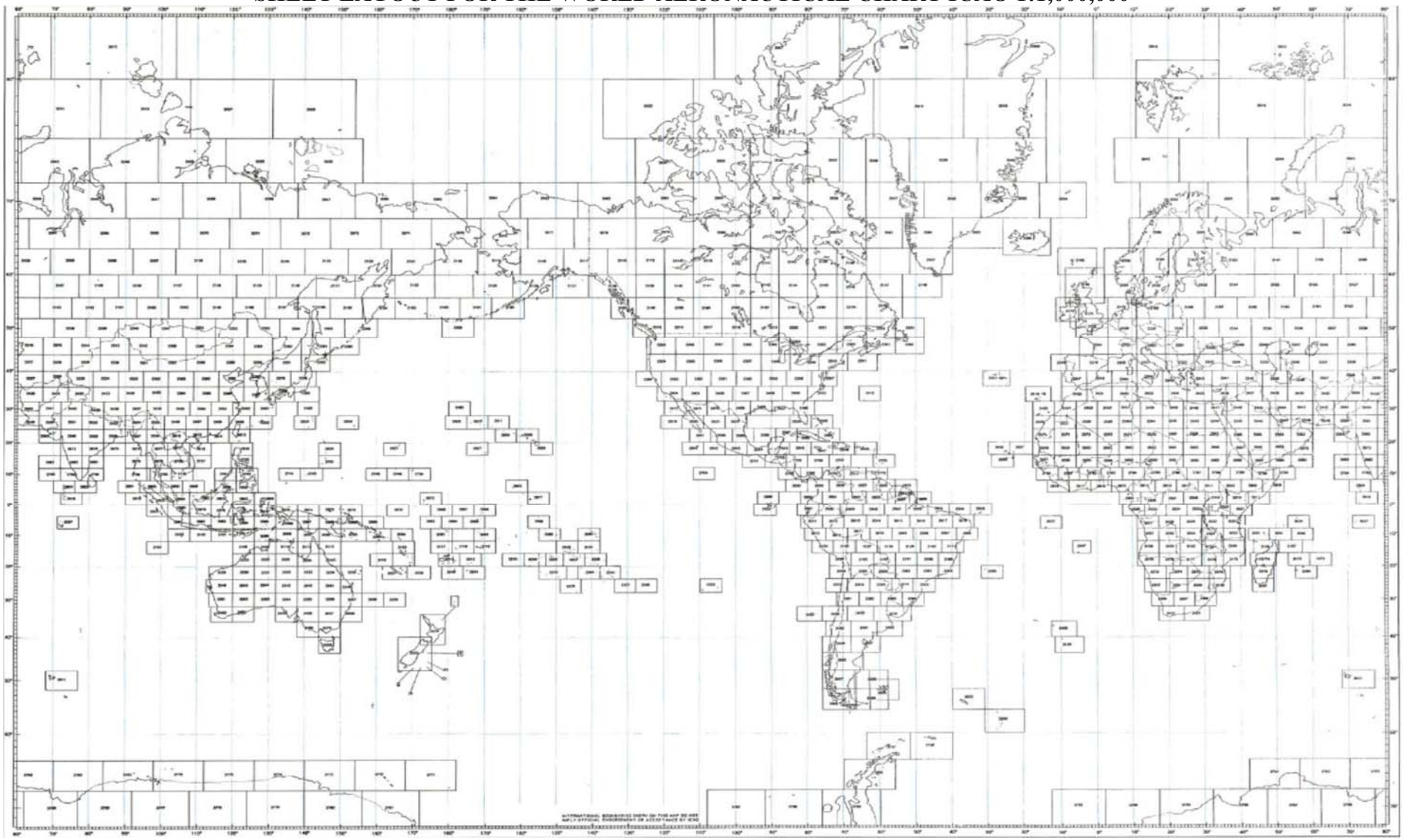


Note 1.— These tints are identical to those specified for the International Map of the World.

Note 2.— Elevations have not been associated with tints of either system in order to allow for flexibility in their selection.

FIFTH SCHEDULE

SHEET LAYOUT FOR THE WORLD AERONAUTICAL CHART ICAO 1:1,000,000



SIXTH SCHEDULE
Regulation 100, 113, 131

AERONAUTICAL DATABASE PUBLICATION REQUIREMENTS

(1) For RNAV standard departure procedures — instrument (SID), the following data shall be published in tabular form or a formal textual description on the verso of the chart or a separate, properly referenced sheet:

(a) procedure designator;
(b) required navigation performance or basis for the approval applicable to the procedure;
(c) unambiguous description of the path and the method of termination of each specified segment;
(d) names, coded designators or name-codes and the geographical coordinates in degrees, minutes, seconds, and tenths of seconds, of all significant points defining the route, including annotation as to whether the significant point is fly-by or flyover;
(e) geodesic distance to the nearest tenth of a kilometre or tenth of a nautical mile between each successive designated significant point;
(f) true track to the nearest tenth of a degree and magnetic track to the nearest degree between each successive significant point;
(g) upper and lower altitude limit at a significant point, to the nearest higher 50 m or 100 ft/flight level, as applicable;
(h) speed limit at a significant point, expressed in units of 10 knots, as applicable;
(i) remarks; and
(j) associated RNAV holding procedure data including:
    (i) holding identification (if any);
    (ii) holding fix (navigation aid) or waypoint with geographical coordinates in degrees, minutes, seconds, and tenths of seconds;
    (iii) inbound true track to the nearest tenth of a degree and magnetic track to the nearest degree;
    (iv) maximum indicated air speed expressed in units of 10 knots;
    (v) minimum and maximum holding level to the nearest higher 50 m or 100 ft/flight level;
    (vi) time/distance to the nearest tenth of a kilometre or tenth of a nautical mile outbound; and
    (vii) direction of the turn.

(2) For RNAV standard arrival procedures — instrument (STAR) the following data shall be published in tabular form or a formal textual description on the verso of the chart or a separate, properly referenced sheet:

(a) procedure designator;
(b) required navigation performance or basis for the approval applicable to the procedure;
(c) unambiguous description of the path and the method of termination of each specified segment;
(d) names, coded designators or name-codes and the geographical coordinates in degrees, minutes, seconds, and tenths of seconds, of all significant points defining the route, including annotation as to whether the significant point is fly-by or flyover;
(e) geodesic distance to the nearest tenth of a kilometre or tenth of a nautical mile between each successive designated significant point;
(f) true track to the nearest tenth of a degree and magnetic track to the nearest degree between each successive significant point;
(g) upper and lower altitude limit at a significant point, to the nearest higher 50 m or 100 ft/flight level, as applicable;
(h) speed limit at a significant point, expressed in units of 10 knots, as applicable;
(i) vertical path angle to the nearest one one-hundredth of a degree, as applicable;
(j) remarks; and
(k) associated RNAV holding procedure data including:
    (i) holding identification (if any);
    (ii) holding fix (navigation aid) or waypoint with geographical coordinates in degrees, minutes, seconds, and tenths of seconds;
    (iii) inbound true track to the nearest tenth of a degree and magnetic track to the nearest degree;
    (iv) maximum indicated air speed expressed in units of 10 knots;
    (v) minimum and maximum holding level to the nearest higher 50 m or 100 ft/flight level;
    (vi) time/distance to the nearest tenth of a kilometre or tenth of a nautical mile outbound; and
    (vii) direction of the turn.

(3) For RNAV instrument approach procedures, the following data shall be published in tabular form or a formal textual description on the verso of the chart or a separate, properly referenced sheet:

(a) procedure designator;

(b) required navigation performance or basis for the approval applicable to the procedure;

(c) unambiguous description of the path, including, in the case of procedures based on SBAS, a textual representation of the FAS Data Block, and the method of termination of each specified segment;

(d) names, coded designators or name-codes and the geographical coordinates in degrees, minutes, seconds, and tenths of seconds, of all significant points defining the route, including annotation as to whether the significant point is fly-by or flyover;

(e) geodesic distance to the nearest tenth of a kilometre or tenth of a nautical mile between each successive designated significant point;

(f) true track to the nearest tenth of a degree and magnetic track to the nearest degree between each successive significant point;

(g) upper and lower altitude limit at a significant point, to the nearest higher 50 m or 100 ft/flight level, as applicable;

(h) speed limit at a significant point, expressed in units of 10 knots, as applicable;

(i) final approach vertical path angle to the nearest one one-hundredth of a degree;

(j) threshold crossing height to the nearest foot, as applicable;

(k) remarks; and

(l) associated RNAV holding procedure data including:

(i) holding identification (if any);

(ii) holding fix (navigation aid) or waypoint with geographical coordinates in degrees, minutes, seconds, and tenths of seconds;

(iii) inbound true track to the nearest tenth of a degree and magnetic track to the nearest degree;

(iv) direction of the turn;

(v) maximum indicated air speed expressed in units of 10 knots;

(vi) minimum and maximum holding level to the nearest higher 50 m or 100 ft/flight level; and

(vii) time/distance to the nearest tenth of a kilometre or tenth of a nautical mile outbound.

Issued under my hand in Juba on this 12th **day of the month of** Feb **in Year 2026.**

12/02/2026

Hon Rizik Zakaria Hassan
Minister of Transport
Republic of South Sudan - Juba