

*The Civil Aviation (Aeronautical Charts)
Regulations, 2017*

GN No. 70 (contd.)

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THE CIVIL AVIATION ACT
(CAP. 80)

THE CIVIL AVIATION (AERONAUTICAL CHARTS)
REGULATIONS, 2017

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THE CIVIL AVIATION ACT
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REGULATIONS

(Made under section 4)

THE CIVIL AVIATION (AERONAUTICAL CHARTS)
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PART I
PRELIMINARY

- Citation 1. These Regulations may be cited as the Civil Aviation (Aeronautical Charts) Regulations, 2015.
- Interpretation 2. 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 defence identification zone.Special” means 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” means a defined area, on a land aerodrome, intended to accommodate aircraft for purposes of loading or unloading passengers, mail or cargo, fuelling, parking or maintenance;
- “Area 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 omni directional radio ranges is expected to transfer its primary navigational reference from the facility behind the aircraft to the next facility ahead of the aircraft;

“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 aeroplane 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;

“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 meets the requirements of the data user in terms of accuracy, resolution and integrity;

“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:

- (a) at the end of the last procedure turn, base turn or inbound turn of a racetrack procedure, if specified; or
- (b) at the point of interception of the last track specified in the approach procedure; and
- (c) ends at a point in the vicinity of an aerodrome from which:
 - (d) a landing can be made; or
 - (e) 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;
- “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:

- (a) routine data: there is a very low probability when using corrupted routine data that the continued safe flight and landing of an aircraft would be severely at risk with the potential for catastrophe;
- (b) essential data: there is a 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;
- (c) 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;
- “Manoeuvring 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 en-route 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 centred 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:

- (a) 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;
- (b) 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;

“Obstacle” means all fixed (whether temporary or permanent) and mobile objects, or parts thereof,

that:

- (a) are located on an area intended for the surface movement of aircraft; or
- (b) extend above a defined surface intended to protect aircraft in flight; or
- (c) stand outside those defined surfaces and that have been assessed as being a hazard to air navigation;

“Obstacle clearance altitude (OCA) or obstacle clearance height (OCH)” 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 frangibly 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/height” means specified altitude/height flown operationally at or above the minimum altitude/height and established to accommodate a stabilized descent at a prescribed descent gradient/angle in the intermediate/final approach segment;

“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 stopway, if provided, intended:

- (a) to reduce the risk of damage to aircraft running off a runway; and
- (b) 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 centre 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 centred 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:

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

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

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

“Terminal 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 centred 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 aeroplanes 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:

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

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

Application

3.-(1) These Regulations shall apply to aeronautical charts published by aeronautical information service providers in the United Republic.

(2) Aeronautical charts service providers shall ensure that all aeronautical charts published conform to the requirements under these Regulations.

Availability

4. The 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 in whichever way 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) produce the chart or sheet itself; or
 - (ii) arrange for the production of the chart or sheet by another State or by an agency; 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.

PART II

GENERAL SPECIFICATIONS

Operational
requirements for

- 5.-(1) The aeronautical charts service provider shall ensure that each type of chart provides

charts

information:

- (a) relevant to the function of the chart and the design of the chart shall observe Human Factors principles to facilitate its optimum use;
- (b) for the safe and expeditious operation of the aircraft appropriate to the phase of flight as listed below-
 - (i) Phase 1 -Taxi from aircraft stand to take off
 - (ii) Phase 2 -Take off and climb to en-route ATS route structure
 - (iii) Phase 3 -Enroute ATS route structure
 - (iv) Phase 4 -Descent to approach
 - (v) Phase 5 -Approach to land and missed approach
 - (vi) Phase 6 -Landing and taxi to aircraft stand.
- (c) that is accurate, free from distortion and clutter, unambiguous, and readable under all normal operating conditions;
- (d) and that the colours 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;
- (e) in a form which enables the pilot to acquire information in a reasonable time consistent with workload and operating conditions;
- (f) that permits smooth transition from chart to chart as appropriate to the phase of flight.
- (2) The charts shall be True North orientated.
- (3) The basic sheet size of the charts shall be 210 × 297 mm (8.27 x 11.69 inches) (A4).

Titles

6. The aeronautical charts service provider shall ensure that the title of a chart or chart series prepared in accordance with these regulations intended to satisfy the

function of the chart shall be that of the relevant part heading except that such title shall not include “ICAO” unless the chart conforms with all requirements specified in part II and any specified for the particular chart.

Miscellaneous
information

7. The aeronautical charts service provider shall ensure that:

- (a) the marginal note layout is as given in the First Schedule, except as otherwise specified for a particular chart;
- (b) the following information is shown on the face of each chart unless otherwise stated in the specification of the chart concerned:
 - (i) designation or title of the chart series;
 - (ii) name and reference of the sheet;
 - (iii) on each margin an indication of the adjoining sheet where applicable;
- (c) a legend to the symbols and abbreviations used is provided and shall be on the face or reverse of each chart except that, where it is impracticable for reasons of space, a legend may be published separately;
- (d) the name and adequate address of the producing agency shall be shown 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.

Symbols

8. The aeronautical charts service provider shall ensure that:

- (a) the symbols used conform 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;
- (b) the same basic symbol is used on all charts on which it appears, regardless of chart purpose to represent ground-based navigation aids, intersections and waypoints.
 - (c) the symbol used for significant points is based on a hierarchy of symbols and selected in the following order:
 - (i) ground-based navigation aid;
 - (ii) intersection;
 - (iii) waypoint symbol.
 - (d) a waypoint symbol is used only when a particular significant point does not already exist as either a ground-based navigation aid or intersection.
 - (e) the symbols are shown in the manner specified in sub regulation (b), (c) and second schedule - ICAO Chart Symbols, symbol number 121.

Units of
measurement

9. The aeronautical charts service provider shall ensure that the:
- (a) distances are derived as geodesic distances.
 - (b) distances are expressed in either kilometers or nautical miles or both, provided the units are clearly differentiated.
 - (c) altitudes, elevations and heights are expressed in either meters or feet or both, provided the units are clearly differentiated.
 - (d) linear dimensions on aerodromes and short distances are expressed in meters.
 - (e) order of resolution of distances, dimensions, elevations and heights are as specified for a

	particular chart.
	(f) units of measurement used to express distances, altitudes, elevations and heights are conspicuously stated on the face of each chart.
	(g) conversion scales are provided on each chart on which distances, elevations or altitudes are shown and shall be placed on the face of each chart.
Scale and projection	10. The aeronautical charts service provider shall ensure that: (a) the name and basic parameters and scale of the projection are indicated for charts of large areas. (b) charts of small areas, a linear scale only is indicated
Date of validity of aeronautical information	11. The aeronautical charts service provider shall clearly indicate on the face of each chart the date of validity of aeronautical information.
Spelling of geographical names	12. The aeronautical charts service provider shall ensure that:- (a) the symbols of the Roman alphabet are used for all writing. (b) the word where a geographical term such as “cape”, “point”, “gulf”, “river”, is abbreviated on any particular chart are spelt out in full in the language used by the publishing agency in respect of the most important example of each type. (c) punctuation marks are not used in abbreviations within the body of a chart.
Abbreviations	13. The aeronautical charts service provider shall ensure that:- (a) abbreviations are used on aeronautical charts

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whenever they are appropriate.

- (b) abbreviations are selected from the Procedures for Air Navigation Services - ICAO Abbreviations and Codes (Doc 8400) where applicable.

Political
boundaries

14. The aeronautical charts service provider shall ensure that:-

- (a) the international boundaries are shown, but may be interrupted if data more important to the use of the chart would be obscured.
- (b) the names identifying the countries shall be indicated where the territory of more than one State appears on a chart.

Colours

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

Relief

16. The aeronautical charts service provider shall ensure that-

- (a) relief, where shown, is portrayed in a manner that will satisfy the chart users' need for:
 - (i) Orientation and identification;
 - (ii) Safe terrain clearance;
 - (iii) Clarity of aeronautical information when shown;
 - (iv) Planning.
- (b) the tints used where relief is shown by hypsometric tints, are based on those shown in the Hypsometric Tint Guide in the Fourth Schedule of the Regulation.
- (c) the spot elevations are shown for selected critical points where spot elevations are used
- (d) the value of spot elevations of doubtful accuracy is followed by the sign \pm .

Prohibited,

17. The aeronautical charts service provider shall

restricted and
danger areas ensure that the reference or other identification are included when prohibited, restricted or danger areas are shown, except that the nationality letters may be omitted.

Air traffic
services
airspace 18. The aeronautical charts service provider shall ensure that the class of airspace, the type, name or call sign, the vertical limits and the radio frequency to be used is indicated when ATS airspace is shown on a chart, and the horizontal limits specified in accordance to second schedule these Regulations.

Magnetic
variation 19. The aeronautical charts service provider shall ensure that:-
(a) the True North and magnetic variation are indicated and the order of resolution of magnetic variation is that as specified for a particular chart.
(b) 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;
(c) an interim date and value are quoted in exceptional cases where the current value would be more than one degree different, after applying the calculation for annual change,

Aeronautical
data 20. The aeronautical charts service provider shall ensure that-
(a) all necessary measures are taken to introduce a properly organized quality system containing procedures, processes and resources necessary to implement quality management at each function stage as specified in the Civil Aviation (Aeronautical charts Services) Regulations;
(b) the execution of such quality management is

- made demonstrable for each function stage, when required;
- (c) 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;
- (d) the order of chart resolution of aeronautical data is as specified for a particular chart and as presented in a tabular form in the sixth schedule of these Regulations;
- (e) the integrity of aeronautical data is maintained throughout the data process from survey or origin to the next intended user;
- (f) based on the applicable integrity classification, the validation and verification procedures shall:
 - (i) for routine data: avoid corruption throughout the processing of the data;
 - (ii) for essential data: assure corruption does not occur at any stage of the entire process and include additional processes as needed to address potential risks in the overall system architecture to further assure data integrity at this level; and
 - (iii) critical data: assure corruption does not occur at any stage of the entire process and include additional integrity assurance processes to fully mitigate the effects of faults identified through analysis of the overall system architecture as potential data integrity risks.

- (g) the Aeronautical data quality requirements related to the integrity and data classification is as provided in Tables 1-6 in the sixth schedule of these Regulations;
- (h) electronic aeronautical data sets are protected by the inclusion in the data sets of a 32-bit cyclic redundancy check (CRC) implemented by the application dealing with the data sets and applied to the protection of all integrity levels of data sets as specified in sub-regulation(f) .

Common reference systems

Horizontal
reference system

21. The aeronautical charts service provider shall ensure that-

- (a) the World Geodetic System-1984 is used as the horizontal reference system;
- (b) published aeronautical geographical coordinates indicating latitude and longitude are expressed in terms of the WGS-84 geodetic reference datum;
- (c) 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;
- (d) the order of chart resolution of geographical coordinates is as specified for a particular chart series and in accordance with Table 1 of the sixth schedule.

Vertical
reference system

22. The aeronautical charts service provider shall ensure that the-

- (a) mean sea level datum is used as the vertical reference system;

- (b) elevations referenced to mean sea level, for the specific surveyed ground positions, geoid undulation for the surveyed positions are published as specified for a particular chart;
- (c) order of chart resolution of elevation and geoid undulation as specified for a particular chart series and in accordance with Table 2 of the sixth schedule.

Temporal
reference system

23. The aeronautical charts service provider shall ensure that-

- (a) the Gregorian calendar and Coordinated Universal Time are used as the temporal reference system;
- (b) a temporal reference system different from the one specified in paragraph (a) used for charting is indicated in GEN 2.1.2 of the Aeronautical Information Publication.

PART III

AERODROME OBSTACLE CHART - ICAO TYPE A

Function

24. 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.

Availability

25. The aeronautical charts service provider shall ensure that-

- (a) the Aerodrome Obstacle Chart-ICAO Type A is made available in the manner specified in Regulation 4(2) 1.3.2 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 Part IV;
- (b) a notification is published in the AIP where a chart is not required because no obstacles exist in the take-off flight path area.
- Units of measurement 26. The aeronautical charts service provider shall ensure that the-
- (a) elevations are shown to the nearest half-metre or to the nearest foot;
- (b) linear dimensions are shown to the nearest half-metre.
- Coverage and scale 27. The aeronautical charts service provider shall ensure that the-
- (a) extent of each plan is sufficient to cover all obstacles;
- (b) horizontal scale is within the range of 1:10 000 to 1:15 000;
- (c) vertical scale is ten times the horizontal scale;
- (d) horizontal and vertical linear scales showing both metres and feet are included in the charts.
- Format 28. The aeronautical charts service provider shall ensure that the-
- (a) charts depict a plan and profile of each runway, any associated stopway or clearway, the take-off flight path area and obstacles;
- (b) profile for each runway, stopway, clearway and the obstacles in the take-off flight path area are shown above its corresponding plan;
- (c) 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;
- (d) profile grid is ruled over the entire profile area exclusive of the runway;
 - (e) zero for vertical coordinates is mean sea level.
 - (f) zero for horizontal coordinates is at the end of the runway furthest from the take-off flight path area concerned.
 - (g) graduation marks indicating the subdivisions of intervals is shown along the base of the grid and along the vertical margins.
 - (h) vertical grid has intervals of 30 m (100 ft) and the horizontal grid has intervals of 300 m (1 000 ft).
 - (i) chart includes:
 - (i) a box for recording the operational data specified in (3.8.3 annex 4);
 - (ii) a box for recording amendments and dates thereof.

Identification

29. 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.

Magnetic variation

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

Aeronautical data

Obstacles

31. The aeronautical charts service provider shall ensure that the -
(a) 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 are regarded as obstacles, except that obstacles lying wholly below the shadow of other obstacles as defined in this regulation need not be shown;

- (b) mobile objects such as boats, trains and trucks, which may project above the 1.2 per cent plane, shall be considered obstacles but shall not be considered as being capable of creating a shadow;
- (c) the plane surface originating at a horizontal line passing through the top of the obstacle at right angles to the centre line of the take-off flight path area is considered as the shadow of an obstacle;
- (d) objects that would become obstacles by removal of obstacle creating a shadow are shown.

Take-off flight
path area

32. The aeronautical charts service provider shall ensure that the-

- (a) take-off flight path area consists of a quadrilateral area on the surface of the earth lying directly below, and symmetrically disposed about, the take-off flight path and has the following characteristics:
 - (i) it commences at the end of the area declared suitable for take-off ;
 - (ii) its 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;
 - (iii) it extends to the point beyond which no obstacles exist or to a distance of 10.0 km (5.4 NM), whichever is the

lesser;

- (b) extent of the take-off flight path area specified in this regulation is increased to not less than 12.0 km (6.5 NM) and the slope of the plane surface specified in regulation 32 (a), (b) and (c) is reduced to 1.0 per cent or less 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.

Declared
distances

33. The aeronautical charts service provider shall ensure that -

- (a) the following information for each direction of each runway is provided:
 - (i) take-off run available;
 - (ii) accelerate-stop distance available;
 - (iii) take-off distance available; and
 - (iv) landing distance available;
- (b) 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.

Plan and profile
views

34.-(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 centre 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 centre line are shown, notes are provided explaining the significance of such areas;

(e) obstacles, including:

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

(2) The aeronautical charts service provider shall ensure that:

- (a) the nature of the runway and stop way surfaces are indicated;
- (b) stop ways are identified as such and are shown by a broken line;
- (c) the length of each stopway is indicated.

(3) The aeronautical charts service provider shall ensure that the profile view shows:

- (a) the profile of the centre line of the runway by a solid line and the profile of the centre line of any associated stopways and clearways by a broken line;
- (b) the elevation of the runway centre line at each end of the runway, at the stop way and at the origin of each take- off;
- (c) 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;
 - (iii) the limits of penetration of obstacles of large extent in a distinctive manner identified in the legend.

Accuracy

35. The aeronautical charts service provider shall ensure that the-

- (a) order of accuracy attained is shown on the chart;
- (b) horizontal dimensions and the elevations of the runway, stopway and clearway to be printed on the chart are determined to the nearest 0.5 m (1 ft);
- (c) 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:
 - (i) horizontal distances: 5 m (15 ft) at a point of origin increasing at a rate of 1 per 500;
 - (ii) 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;
- (d) elevation of the datum used is stated and is identified as assumed where no accurate datum for vertical reference is available.

PART IV

AERODROME OBSTACLE CHART – ICAO TYPE B

Function

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

- (a) the determination of minimum safe altitudes/heights including those for circling procedures;
- (b) the determination of procedures for use in the event of an emergency during take-off or landing;
- (c) the application of obstacle clearing and marking criteria; and
- (d) the provision of source material for

aeronautical charts.

- | | |
|----------------------|--|
| Availability | 37. The aeronautical charts service provider shall ensure that the- |
| | (a) the Aerodrome Obstacle Charts- ICAO Type B is made available, in the manner prescribed in Regulation 4(b) 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 IV; |
| | (b) the Aerodrome Obstacle Chart-ICAO Type B is called the Aerodrome Obstacle Chart-ICAO (Comprehensive) when a chart combining the specifications of part XI and Part XII is made available. |
| Units of measurement | 38. The aeronautical charts service provider shall ensure that the- |
| | (a) elevations are shown to the nearest half-meter or to the nearest foot; |
| | (b) linear dimensions are shown to the nearest half-meter. |
| Coverage and scale | 39. The aeronautical charts service provider shall ensure that- |
| | (a) the extent of each plan is sufficient to cover all obstacles; |
| | (b) the horizontal scale is within the range of 1:10 000 to 1:20 000; |
| | (c) a horizontal linear scale showing both metres and feet is included in the chart and when necessary, a linear scale for kilometres and a linear scale for nautical miles is also to be shown. |
| Format | 40. The aeronautical charts service provider |

shall ensure that the charts shall include:

- (a) any necessary explanation of the projection used;
- (b) any necessary identification of the grid used;
- (c) a notation indicating that obstacles are those which penetrate the surfaces specified in Manual of Aerodromes Standards;
- (d) a box for recording amendments and dates thereof; and
- (e) outside the neat line, every minute of latitude and longitude marked in degrees and minutes.

Identification

41. 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.

Culture and
topography

42. The aeronautical charts service provider shall ensure that the:-

- (a) drainage and hydrographic details are kept to a minimum;
- (b) buildings and other salient features associated with the aerodrome are shown and wherever possible, to scale;
- (c) 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) Regulations are to be shown;
- (d) 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, shall be shown.

Magnetic
variation

43. 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.

Aeronautical
data

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

- (a) the aerodrome reference point and its geographical coordinates in degrees, minutes and seconds;
- (b) the outline of the runways by a solid line;
- (c) the length and width of the runway;
- (d) the magnetic bearing to the nearest degree of the runway and the runway number;
- (e) the elevation of the runway centre line at each end of the runway, at the stopway, at the origin of each take-off and approach area, and at each significant change of slope of runway and stopway;
- (f) taxiways, aprons and parking areas identified as such, and the outlines by a solid line;
- (g) stopways identified as such and depicted by a broken line;
- (h) the length of each stopway;
- (i) clearways identified as such and depicted by a broken line;
- (j) the length of each clearway;
- (k) take-off and approach surfaces identified as such and depicted by a broken line;
- (l) take-off and approach areas;
- (m) obstacles at their exact location, including:
 - (i) a symbol indicative of their type;
 - (ii) elevation;
 - (iii) identification;
 - (iv) limits of penetration of large extent in a distinctive manner identified in the

legend;

- (n) any additional obstacles, as determined by regulation 31(a) including the obstacles in the shadow of an obstacle, which would otherwise be exempted:
 - (i) the nature of the runway and stopway surfaces shall be given;
 - (ii) 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;
 - (iii) the extent of tree areas and relief features, part of which constitute obstacles, shall be shown.

Accuracy

45. The aeronautical charts service provider shall ensure that-

- (a) the order of accuracy attained is shown on the chart.
- (b) the horizontal dimensions and the elevations of the movement area, stopways and clearways to be printed on the chart is determined to the nearest 0.5 m (1 ft).
- (c) 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:
 - (i) Take-off and approach areas:
 - (aa) horizontal distances: 5 m (15 ft) at point of origin increasing at a rate of 1 per 500;
 - (bb) 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.

(ii) Other areas:

- (aa) 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;
- (bb) 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.

- (d) the elevation of the datum used is stated and identified as assumed, where no accurate datum for vertical reference is available.

PART V

AERODROME TERRAIN AND OBSTACLE CHART – ICAO
(ELECTRONIC)

Function

46. 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:

- (a) 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
- (b) support the following air navigation applications:
 - (i) instrument procedure design (including circling procedure);
 - (ii) aerodrome obstacle restriction and removal; and

- (iii) provision of source data for the production of other aeronautical charts.

Availability

47. The aeronautical charts service provider shall ensure that the:

- (a) aerodrome Terrain and Obstacle Charts - ICAO (Electronic) is made available in the manner specified in regulation 4(b) for aerodromes regularly used by international civil aviation;
- (b) aerodrome Terrain and Obstacle Chart - ICAO (Electronic) is made available in hard copy format upon request; and
- (c) ISO 19100 series of standards for geographic information is used as a general data modelling framework.

Identification

48. 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.

Chart coverage

49. The extent of each chart shall be sufficient to cover Area 2 as specified in the Civil Aviation (Aeronautical Information Services) Regulations, 2017.

General specifications

50. The aeronautical charts service provider shall ensure that the:

- (a) 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;
- (b) 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;

- (c) portrayal rules are stored in a portrayal catalogue which making reference to separately stored portrayal specifications;
- (d) Symbols used to portray features are in accordance with regulation 8 and the Second Schedule- ICAO Chart Symbols.

Terrain Feature

51. The aeronautical charts service provider shall ensure that:

- (a) the terrain feature, and associated attributes, to be portrayed and database-linked to the chart are based on the electronic terrain data sets which satisfy the requirements the Civil Aviation (Aeronautical Information Services) Regulations, 2017;
- (b) the terrain feature are portrayed 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;
- (c) representation of terrain surface is provided as a selectable layer of contour lines in addition to the Digital Elevation Model;
- (d) an ortho-rectified image which matches the features on the digital elevation model with features on the overlying image is to be used to enhance the digital elevation model and the image shall be provided as a separate selectable layer;
- (e) the portrayed terrain feature is linked to the following associated attributes in the database:
 - (i) horizontal positions of grid points in

geographic coordinates and elevations of the points;

(ii) surface type;

(iii) contour line values, if provided; and

(iv) names of cities, towns and other prominent topographic features.

(f) other terrain attributes specified in the Civil Aviation (Aeronautical Information Services) Regulations Eighth Schedule, Table A8-3, and provided in the database(s) is linked to the portrayed terrain feature.

Obstacle
features

52. The aeronautical charts service provider shall ensure that the-

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

(b) each obstacle is portrayed by an appropriate symbol and obstacle identifier;

(c) the portrayed obstacle feature is linked to the following associated attributes in the database(s):

(i) horizontal position in geographic coordinates and associated elevation;

(ii) obstacle type; and

(iii) obstacle extent, if appropriate.

(d) other obstacle attributes are as specified in the Civil Aviation (Aeronautical Information Services) Regulations eighth schedule table A8-4, and provided in the database linked to the portrayed obstacle feature.

Aerodrome
features

53. The aeronautical charts service provider shall ensure that the-

(a) 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 (Aerodrome) Regulations and the Civil Aviation (Aeronautical Information Services) Regulations;
- (b) following aerodrome features are portrayed by an appropriate symbol:
- (i) aerodrome reference point;
 - (ii) runway(s), with designation numbers, and if available, stopway(s) and clearway(s); and
 - (iii) taxiways, aprons, large buildings and other prominent aerodrome features.
- (c) portrayed aerodrome feature is linked to the following associated attributes in the database-
- (i) geographical coordinates of the aerodrome reference point;
 - (ii) aerodrome magnetic variation, year of information and annual change;
 - (iii) length and width of runway(s), stopway(s) and clearway(s);
 - (iv) type of surface of runway(s) and stopway(s);
 - (v) magnetic bearings of the runway(s) to the nearest degree;
 - (vi) elevations at each end of runway(s), stopway(s) and clearway(s), and at each significant change in slope of runway(s) and stopway(s);
 - (vii) declared distances for each runway direction, or the abbreviation “NU” where a runway direction cannot be used for take-off or landing or both.

Radio
navigation aid
features

54. The aeronautical information service provider shall ensure that the each radio navigation aid

feature located within the chart coverage is portrayed by an appropriate symbol.

Accuracy and
resolution

55. The aeronautical charts service provider shall ensure that the-

- (a) order of accuracy of aeronautical data is as specified in the Civil Aviation (Air Traffic Services), Regulations and the Civil Aviation (Aerodrome) Regulations;
- (b) order of accuracy of terrain and obstacle data is as specified in the Civil Aviation (Aeronautical Information Services) Regulations eighth schedule;
- (c) aeronautical data resolution is as specified in the Civil Aviation (Aeronautical Information Services) Regulations seventh schedule, and the resolution for terrain and obstacle data is as specified in Civil Aviation (Aeronautical Information Services) Regulations eight schedule.

Electronic
functionality

56. The aeronautical charts service provider shall ensure that the-

- (a) symbols and text size varies with chart scale to enhance readability;
- (b) information on the chart is geo-referenced, and it is possible to determine cursor position to at least the nearest second;
- (c) chart is compatible with widely available desktop computer hardware, software and media;
- (d) chart may include its own “reader” software;
- (e) It is not possible to remove information from the chart without an authorized update;
- (f) selectable information layers shall be 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;

- (g) chart is printed in hard copy format according to the content specifications and scale determined by the user.

Chart data
product
specifications

57. The aeronautical charts service provider shall ensure that the-

- (a) 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 (application);
- (b) chart data product specifications includes an overview, a specification scope, a data product identification, data content information, the reference systems used, the data quality requirements, and information on data capture, data maintenance, data portrayal, data product delivery, as well as any additional information available, and metadata;
- (c) overview of the chart data product specifications provides an informal description of the product and contains the general information about the data product;
- (d) specification scope of the chart data product specifications contains the spatial (horizontal) extent of the chart coverage;
- (e) 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;
- (f) data content of the chart data product specifications clearly identify the type of coverage and imagery and provide a narrative description of each;
- (g) chart data product specifications includes information that defines the reference systems used including-
 - (i) the spatial reference system (horizontal and vertical) and, if appropriate;
 - (ii) temporal reference system.
- (h) the chart data product specifications identifies the data quality requirements including-
 - (i) a statement on acceptable conformance quality levels, and;
 - (ii) corresponding data quality measures.
- (i) statement in paragraph (h) 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.
- (j) The chart data product specifications includes:
 - (i) a data capture statement which is a general description of the sources and processes applied for the capture of chart data;
 - (ii) The principles and criteria applied in the maintenance of the chart;
 - (iii) the frequency with which the chart product is updated;
 - (iv) the maintenance information of obstacle data sets included on the chart, and;
 - (v) an indication of the principles, methods and criteria applied for

obstacle data maintenance.

- (k) chart data product specifications contains:
 - (i) information on how data are portrayed on the chart, as detailed in regulation 51;
 - (ii) the chart data product delivery information which shall include delivery formats and delivery medium information.
- (l) 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.

PART VI

PRECISION APPROACH TERRAIN CHART - ICAO

Function

58. 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.

Availability

59. The aeronautical charts service provider shall ensure that the-

- (a) 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 part V of these regulations;
- (b) precision approach terrain chart is revised

whenever any significant change occurs.

Scale

60. The aeronautical charts service provider may utilize a-

- (a) horizontal scale of 1:2500, and the vertical scale 1:500; or
- (b) horizontal scale of 1:5000 when the chart includes a profile of the terrain to a distance greater than 900 m (3 000 ft) from the runway threshold,

Identification

61. 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.

Plan and profile
information

62. The aeronautical charts service provider shall ensure that the-

(a) chart includes:

- (i) a plan showing contours at 1 m (3 ft) intervals in the area 60 m (200 ft) on either side of the extended centre line of the runway, to the same distance as the profile, the contours to be related to the runway threshold;
- (ii) an indication where the terrain or any object thereon, within the plan defined in a), differs by ± 3 m (10 ft) in height from the centre line profile and is likely to affect a radio altimeter;
- (iii) a profile of the terrain to a distance of 900 m (3 000 ft) from the threshold along the extended centre line of the runway;
- (iv) profile of the terrain is shown to a

distance not exceeding 2 000 m (6 500 ft) 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.

- (b) ILS reference datum height is shown to the nearest half metre or foot.

PART VII

ENROUTE CHART - ICAO

Function

63. 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.

Availability

64. The aeronautical charts service provider shall ensure that the-

- (a) enroute chart-ICAO is made available in the manner prescribed in regulation 4(b) for all areas where flight information regions have been established in (state);
- (b) separate charts are provided 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.

**Coverage and
scale**

65. The aeronautical charts service provider shall ensure that the-

- (a) layout of sheet lines is determined by the density and pattern of the air traffic service route structure;
- (b) large variations of scale between adjacent

charts showing a continuous route structure is to be avoided;

- (c) adequate overlap of charts are provided to ensure continuity of navigation.

Projection

66. The aeronautical charts service provider shall ensure that the-

- (a) parallels and meridians are shown at suitable intervals;
- (b) graduation marks are be placed at consistent intervals along selected parallels and meridians.

Identification

67. The aeronautical charts service provider shall ensure that the each sheet of the chart shall be identified by chart series and number.

Culture and topography

68. The aeronautical charts service provider shall ensure that the-

- (a) generalized shore lines of all open water areas, large lakes and rivers are shown except where they conflict with data more applicable to the function of the chart.
- (b) area minimum altitude are shown within each quadrilateral formed by the parallels and meridians.
- (c) selected orientation used shall be clearly indicated where charts are not True North orientated.

Magnetic variation

69. The aeronautical charts service provider shall ensure that the isogonal are indicated and the date of the isogonic information given.

Bearings, tracks and radials

70. The aeronautical charts service provider shall ensure that the-

- (a) bearings, tracks and radials are magnetic, except as provided for in paragraph (b);

- (b) 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.
- (c) bearings, tracks or radials are clearly indicated where bearings, tracks or radials are given with reference to True North or Grid North.
- (d) reference grid meridian shall be identified when Grid North is used.

Aeronautical data

Aerodromes

71. 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.

*Prohibited,
restricted and
danger areas*

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

*Air traffic
services system*

73. The aeronautical charts service provider shall ensure that the:

- (a) components of the established air traffic services system shall be shown where appropriate;
- (b) components includes the following:
 - (i) 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;
 - (ii) in respect of DME, additionally the elevation of the transmitting antenna of the DME to the nearest 30 m (100

- ft);
- (iii) an indication of all designated airspace, including lateral and vertical limits and the appropriate class of airspace;
- (iv) 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;
- (v) 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;
- (vi) in respect of waypoints defining VOR/DME area navigation routes, additionally;
 - (aa) the station identification and radio frequency of the reference VOR/DME;
 - (bb) 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;
- (vii) an indication of all compulsory and “on-request” reporting points and ATS/MET reporting points;
- (viii) the distances to the nearest kilometre

- or nautical mile between significant points constituting turning points or reporting points;
- (ix) 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;
- (x) minimum en-route 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);
- (xi) communication facilities listed with their channels and, if applicable, logon address and satellite voice communications (SATVOICE) number; and
- (xii) air defence identification zone (ADIZ) properly identified.

Supplementary
information

74. The aeronautical charts service provider shall ensure that the:

- (a) details of departure and arrival routes and associated holding patterns in terminal areas are shown unless they are shown on an Area Chart, a Standard Departure Chart - Instrument (SID) - ICAO or a Standard Arrival Chart - Instrument (STAR) - ICAO.
- (b) altimeter setting regions are shown and identified where established.

PART VIII AREA CHART

- | | |
|--------------------|--|
| Function | <p>75. 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:</p> <ul style="list-style-type: none">(a) the transition between the en-route phase and approach to an aerodrome;(b) the transition between take-off/missed approach and en-route phase of flight; and(c) flights through areas of complex ATS routes or airspace structure. |
| Availability | <p>76. The aeronautical charts service provider shall ensure that the:</p> <ul style="list-style-type: none">(a) area chart - ICAO is made available in the manner specified in regulation 4(b) where the air traffic services routes or position reporting requirements are complex and cannot be adequately shown on an Enroute Chart.(b) separate charts are provided 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,. |
| Coverage and scale | <p>77. The aeronautical charts service provider shall ensure that the:</p> <ul style="list-style-type: none">(a) coverage of each chart extends to points that effectively show departure and arrival routes.(b) chart is drawn to scale and a scale-bar shown. |
| Projection | <p>78. The aeronautical charts service provider shall ensure that the:</p> <ul style="list-style-type: none">(a) a conformal projection on which a straight line approximates a great circle is used.(b) parallels and meridians are shown at suitable intervals. |

- (c) graduation marks are placed at consistent intervals along the neat lines, as appropriate.

Identification

79. The aeronautical charts service provider shall ensure that the chart be identified by a name associated with the airspace portrayed.

Culture and topography

80. The aeronautical charts service provider shall ensure that the-

- (a) generalized shorelines of all open water areas, large lakes and rivers are shown except where they conflict with data more applicable to the function of the charts.
- (b) all relief exceeding 300 m (1 000 ft) above the elevation of the primary aerodrome shall be shown by smoothed contour lines, contour values and layer tints printed in brown, in areas where significant relief exists.
- (c) appropriate spot elevations, including the highest elevation within each top contour line, are shown printed in black and obstacles shown.

Magnetic variation

81. The aeronautical charts service provider shall ensure that the average magnetic variation of the area covered by the chart is shown to the nearest degree.

Bearings, tracks and radials

82. The aeronautical charts service provider shall ensure that the:

- (a) bearings, tracks and radials are magnetic, except as provided for in paragraph (b);
- (b) 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,
- (c) bearings, track or radials are clearly indicated when Grid North is used,
- (d) reference grid meridian are identified where

bearings, tracks or radials are given with reference to True North or Grid North.

Aeronautical data

Aerodromes 83. The aeronautical charts service provider shall ensure that the all aerodromes which affect the terminal routings are shown and where appropriate, a runway pattern symbol shall be used.

Prohibited,
restricted and
danger areas 84. The aeronautical charts service provider shall ensure that prohibited, restricted and danger areas are depicted with their identification and vertical limits.

Area minimum
altitudes 85. The aeronautical charts service provider shall ensure that the area minimum altitudes are shown within quadrilaterals formed by the parallels and meridians.

Air traffic
services system 86. The aeronautical charts service provider shall ensure that the-

- (a) components of the established relevant air traffic services system are shown;
- (b) components required in sub regulation (1) include the following:
 - (i) 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;
 - (ii) in respect of DME, additionally the elevation of the transmitting antenna of the DME to the nearest 30 m (100 ft);
 - (iii) terminal radio aids which are required for outbound and inbound traffic and for holding patterns;

- (iv) the lateral and vertical limits of all designated airspace and the appropriate class of airspace;
- (v) the designation of the navigation specification(s) including any limitations, where established;
- (vi) 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;
- (vii) 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;
- (viii) in respect of waypoints defining VOR/DME area navigation routes, additionally:
 - (aa) the station identification and radio frequency of the reference VOR/DME;
 - (bb) 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;
- (ix) an indication of all compulsory and “on-request” reporting points;
- (x) the distances to the nearest kilometre or nautical mile between significant points constituting

- turning points or reporting points;
- (xi) change-over points on route segments defined by reference to very high frequency omni directional radio ranges, indicating the distances to the nearest kilometre or nautical mile to the radio navigation aids;
- (xii) minimum en-route 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, 2.22);
- (xiii) established minimum vectoring altitudes to the nearest higher 50 m or 100 ft, clearly identified;
- (xiv) area speed and level/altitude restrictions where established;
- (xv) communication facilities listed with their channels and, if applicable, logon address and SATVOICE number; and
- (xvi) an indication of “flyover” significant points.

PART IX STANDARD DEPARTURE CHART - INSTRUMENT (SID)

- | | |
|--------------|--|
| Function | 87. The aeronautical charts service provider shall ensure that the standard departure chart - instrument provides 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. |
| Availability | 88. The aeronautical charts service provider shall ensure that the standard departure Chart - instrument (SID) is made available wherever standard departure |

route - instrument has been established and cannot be shown with sufficient clarity on the Area Chart - ICAO.

Coverage and
scale

89. The aeronautical charts service provider shall ensure that the:

- (a) 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;
- (b) chart is drawn to scale;
- (c) a scale-bar is shown if the chart is drawn to scale;
- (d) annotation “NOT TO SCALE” is shown when the chart is not drawn to scale and the symbol for scale break is used on tracks and other aspects of the chart which are too large to be drawn to scale.

Projection

90. The aeronautical charts service provider shall ensure that the:

- (1) a conformal projection on which a straight line approximates a great circle is used.
- (2) parallels and meridians are shown at suitable intervals when the chart is drawn to scale.
- (3) graduation marks are placed at consistent intervals along the neat lines.

Identification

91. The aeronautical charts service provider shall ensure that the: he chart shall be identified by the name of the city or town or area which the aerodrome serves, the name of the aerodrome and the identification of the standard departure route(s) - instrument as established in accordance with the Procedures for Air Navigation Services - Aircraft Operations (PANS II, Part I, Section 3, Chapter 5.

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Culture and
topography

92.-(1) The generalized shore lines of all open water areas, large lakes and rivers shall be shown where the chart is drawn to scale except where they conflict with data more applicable to the function of the chart.

(2) The chart shall be drawn to scale and all relief exceeding 300 m (1 000 ft) above the aerodrome elevation shall be shown by smoothed contour lines, contour values and layer tints printed in brown in areas where significant relief exists.

(3) Appropriate spot elevations, including the highest elevation within each top contour line, shall be shown printed in black and obstacles shown.

Magnetic
variation

93. Magnetic variation used in determining the magnetic bearings, tracks and radials shall be shown to the nearest degree.

Bearings, tracks
and radials

94.-(1) The bearings, tracks and radials shall be magnetic, except as provided for in 9.8.2. The bearings and tracks shall be shown in parentheses to the nearest tenth of a degree where bearings and tracks are additionally provided as true values for RNAV segments.

(2) The bearings, tracks or radial shall be clearly indicated where bearings, tracks or radials are given with reference to True North or Grid North.

(3) The reference grid meridian shall be identified when Grid North is used.

Aeronautical data

Aerodromes

95.-(1) The aerodrome of departure shall be shown by the runway pattern.

(2) All aerodromes which affect the designated standard departure route - instrument shall be shown and identified and where appropriate, the aerodrome runway patterns shall be shown.

Prohibited,
restricted and
danger areas

96. Prohibited, restricted and danger areas which may affect the execution of the procedures shall be shown with their identification and vertical limits.

Minimum sector
altitude

97.-(1) The established minimum sector altitude shall be shown with a clear indication of the sector to which it applies.

(2) The chart shall be drawn to scale and area minimum altitudes shall be shown within quadrilaterals formed by the parallels and meridians.

(3) The area minimum altitudes shall also be shown in those parts of the chart not covered by the minimum sector altitude where the minimum sector altitude has not been established.

Air traffic
services system

98.-(1) The components of the established relevant air traffic services system shall be shown.

(2) The components 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;

(ii) route designator;

(iii) significant points defining the route;

(iv) track or radial to the nearest degree along each segment of the route;

(v) distances to the nearest kilometre or nautical mile between significant points;

(vi) 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;

- (vii) 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;
- (b) the radio navigation aid(s) associated with the route(s) including:
 - (i) plain language name;
 - (ii) identification;
 - (iii) frequency;
 - (iv) geographical coordinates in degrees, minutes and seconds;
 - (v) for DME, the channel and the elevation of the transmitting antenna of the DME to the nearest 30 m (100 ft);
- (c) the name-codes of the significant points not marked by the position of a radio navigation aid, their geographical coordinates in degrees, minutes and seconds and the bearing to the nearest tenth of a degree and distance to the nearest two-tenths of a kilometre (tenth of a nautical mile) from the reference radio navigation aid;
- (d) applicable holding patterns;
- (e) transition altitude/height to the nearest higher 300 m or 1 000 ft;
- (f) 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;
- (g) area speed restrictions, where established;
- (h) the designation of the navigation specification(s) including any limitations, where established;
- (i) all compulsory and “on-request” reporting

- points;
- (j) radio communication procedures, including:
 - (i) call sign(s) of ATS unit(s);
 - (ii) frequency and if applicable, SATVOICE number;
 - (iii) transponder setting, where appropriate;
- (k) an indication of “flyover” significant points.
- (3) A textual description of standard departure route(s) - instrument (SID) and relevant communication failure procedures shall be provided and shall, whenever feasible, be shown on the chart or on the same page which contains the chart.

Aeronautical
database
requirements

99. Appropriate data to support navigation database coding shall be published in accordance with the Procedures for Air Navigation Services - Aircraft Operations (PANS-OPS, Doc 8158), Volume II, Part III, Section 5, Chapter 2, 2.1, on the verso of the chart or as a separate, properly referenced sheet.

PART X

STANDARD ARRIVAL CHART - INSTRUMENT (STAR) - ICAO

Function

100. This chart shall provide the flight crew with information to enable it to comply with the designated standard arrival route instrument from the en-route phase to the approach phase.

Availability

101. The Standard Arrival Chart - Instrument (STAR) - ICAO shall be made available wherever a standard arrival route - instrument has been established and cannot be shown with sufficient clarity on the Area Chart.

Coverage and
scale

102.-(1) The coverage of the chart shall be sufficient to indicate the points where the en-route phase ends and the approach phase begins.

(2) The chart shall be drawn to scale.

(3) A scale-bar shall be shown if the chart is drawn to scale.

(4) The annotation “NOT TO SCALE” shall be shown when the chart is not drawn to scale and the symbol for scale break shall be used on tracks and other aspects of the chart which are too large to be drawn to scale.

Projection

103.-(1) A conformal projection on which a straight line approximates a great circle shall be used.

(2) The parallels and meridians shall be shown at suitable intervals when the chart is drawn to scale.

(3) The graduation marks shall be placed at consistent intervals along the neat lines.

Identification

104. The chart shall be identified by the name of the city or town or area which the aerodrome serves, the name of the aerodrome, and the identification of the standard arrival route(s) - instrument as established in accordance with the Procedures for Air Navigation Services - Aircraft Operations (PANS-OPS, Doc 8158), Volume II, Part I, Section 4, Chapter 2.

Culture and
topography

105.-(1) The generalized shore lines of all open water areas, large lakes and rivers shall be shown where the chart is drawn to scale, except where they conflict with data more applicable to the function of the chart.

(2) The chart shall be drawn to scale and all relief exceeding 300 m (1 000 ft) above the aerodrome elevation shall be shown by smoothed contour lines, contour values and layer tints printed in brown in areas where significant relief exists.

(3) Appropriate spot elevations, including the highest elevation within each top contour line, shall be shown printed in black and obstacles shown.

Magnetic
variation

106. The Magnetic variation used in determining the magnetic bearings, tracks and radials shall be shown

to the nearest degree.

Bearings, tracks
and radials

107.-(1) The bearings, tracks and radials shall be magnetic, except as provided for in 10.8.2.

(2) The bearings and tracks shall be shown in parentheses to the nearest tenth of a degree where bearings and tracks are additionally provided as true values for RNAV segments.

(3) The bearings, tracks or radials shall be clearly indicated where bearings, tracks or radials are given with reference to True North or Grid North.

(4) The reference grid meridian shall be identified when Grid North is used.

Aeronautical data

Aerodromes

108.-(1) The aerodrome of landing shall be shown by the runway pattern.

(2) All aerodromes which affect the designated standard arrival route-instrument shall be shown and identified. Where appropriate, the aerodrome runway patterns shall be shown.

Prohibited,
restricted and
danger areas

109. Prohibited, restricted and danger areas which may affect the execution of the procedures shall be shown with their identification and vertical limits.

Minimum sector
altitude

110.-(1) The established minimum sector altitude shall be shown with a clear indication of the sector to which it applies.

(2) The chart shall be drawn to scale and area minimum altitudes shall be shown within quadrilaterals formed by the parallels and meridians where the minimum sector altitude has not been established.

(3) The area minimum altitudes shall also be shown in those parts of the chart not covered by the minimum sector altitude.

Air traffic
services system

111.-(1) The components of the established relevant air traffic services system shall be shown.

(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 kilometre 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 100 ft, clearly identified;

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

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

(c) the name-codes of the significant points not marked by the position of a radio navigation aid, their geographical coordinates in

- degrees, minutes and seconds and the bearing to the nearest tenth of a degree and distance to the nearest two-tenths of a kilometre (tenth of a nautical mile) from the reference radio navigation aid;
- (d) applicable holding patterns;
- (e) transition altitude/height to the nearest higher 300 m or 1 000 ft;
- (f) area speed restrictions, where established;
- (g) the designation of the navigation specification(s) including any limitations, where established;
- (h) all compulsory and “on-request” reporting points;
- (i) radio communication procedures, including:
 - (i) call sign(s) of ATS unit(s);
 - (ii) frequency and if applicable, SATVOICE number;
 - (iii) transponder setting, where appropriate;
- (j) an indication of “flyover” significant waypoints; and
- (k) for arrival procedures to an instrument approach designed specifically for helicopters the term “CAT H” shall be depicted in the arrival chart plan view.

(3) A textual description of standard arrival route(s) - instrument (STAR) and relevant communication failure procedures shall be provided and shall, whenever feasible, be shown on the chart or on the same page which contains the chart.

Aeronautical
database
requirements

112. The aeronautical charts service provider shall ensure that appropriate data to support navigation database coding shall be published in accordance with the Procedures for Air Navigation Services- Aircraft Operations (PANS-OPS, Doc 8158), Volume II, Part III, on the verso of the chart or as a separate, properly

referenced sheet.

PART XI
INSTRUMENT APPROACH CHART-ICAO

- | | |
|--------------|---|
| Function | 113. The aeronautical charts service provider shall ensure that the Instrument Approach chart is providing 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. |
| Availability | <p>114. The aeronautical charts service provider shall ensure that-</p> <ul style="list-style-type: none">(a) instrument Approach Charts-ICAO are made available for all aerodromes used by international civil aviation where instrument approach procedures have been established by the (State);(b) a separate Instrument Approach Chart-ICAO is provided for each precision approach procedure established by the (State);(c) a separate Instrument Approach Chart-ICAO is provided for each non-precision approach procedure established by the (State);(d) more than one chart is provided 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(e) instrument Approach Charts-ICAO is revised whenever information essential to safe operation becomes out of date. |
| Coverage and | 115. The aeronautical charts service provider |

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scale	<p>shall ensure that-</p> <ul style="list-style-type: none">(a) 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;(b) the scale selected ensure optimum legibility consistent with-<ul style="list-style-type: none">(i) the procedure shown on the chart;(ii) Sheet size.(c) a scale indication is given;(d) a distance circle with a radius of 20 km (10 NM) centred on a DME located on or close to the aerodrome, or on the aerodrome reference point where no suitable DME is available, is shown; its radius indicated on the circumference, except where this is not practicable and(e) a distance scale shall be shown directly below the profile.
Format	<p>116. The aeronautical charts service provider shall ensure that the sheet size is 210 × 297 mm (8.27 x 11.69 inches) (A4).</p>
Projection	<p>117. The aeronautical charts service provider shall ensure that-</p> <ul style="list-style-type: none">(a) a conformal projection on which a straight line approximates a great circle is used; and(b) the graduation marks are placed at consistent intervals along the neat lines.
Identification	<p>118. The aeronautical charts service provider shall ensure that the chart is identified by the name of the city or town or area which the aerodrome serves, the name of the aerodrome and the identification of the instrument approach procedure as established in accordance with the Procedures for Air Navigation</p>

Services-Aircraft Operations document.

Culture and
topography

119. The aeronautical charts service provider shall ensure that-

- (a) 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;
- (b) topographic information is named, only when necessary, to facilitate the understanding of such information, and the minimum is delineation of land masses and significant lakes and rivers;
- (c) relief is shown in a manner best suited to the particular elevation characteristics of the area;
- (d) 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, 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;
- (e) appropriate spot elevations, including the highest elevation within each top contour line, is shown printed in black; and
- (f) 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. Appropriate spot elevations, including the

highest elevation within each top contour line, is shown printed in black.

Magnetic
variation

120. The aeronautical charts service provider shall ensure that-

- (a) the magnetic variation is shown and
- (b) the value of the variation, indicated to the nearest degree, is agree with that used in determining magnetic bearings, tracks and radials when shown.

Bearings, tracks
and radials

121. The aeronautical charts service provider shall ensure that the-

- (a) bearings, tracks and radials are magnetic;
- (b) 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;
- (c) bearings, tracks or radials are clearly indicated where bearings, tracks or radials are given with reference to True North or Grid North.
- (d) reference grid meridian is identified when Grid North is used.

Aeronautical data

Aerodromes

122. The aeronautical charts service provider shall ensure that-

- (a) all aerodromes which show a distinctive pattern from the air is shown by the appropriate symbol. Abandoned aerodromes are identified as abandoned;
- (b) the runway pattern, at a scale sufficiently large to show it clearly is shown for-
 - (i) the aerodrome on which the procedure is based;
 - (ii) 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.

- (c) the aerodrome elevation is shown to the nearest metre or foot in a prominent position on the chart; and
- (d) the threshold elevation or, where applicable, the highest elevation of the touchdown zone shall be shown to the nearest meter or foot.

Obstacles

123. The aeronautical charts service provider shall ensure that-

- (a) obstacles are shown on the plan view of the chart;
- (b) obstacles are identified if one or more obstacles are the determining factor of an obstacle clearance altitude or height;
- (c) the elevation of the top of obstacles are shown to the nearest metre or foot;
- (d) the heights of obstacles above a datum other than mean sea level are shown and, they are given in parentheses on the chart when shown;
- (e) the datum is the aerodrome elevation 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 shall be the threshold elevation of the runway to which the instrument approach is related;
- (f) the datum is stated in a prominent position on the chart where a datum other than mean sea level is used; and
- (g) the obstacle free zone is indicated where an obstacle free zone has not been established

for a precision approach runway Category I.

Prohibited,
restricted and
danger areas

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

Radio
communication
facilities and
navigation aids

125. The aeronautical charts service provider shall ensure that-

- (a) radio navigation aids required for the procedures together with their frequencies, identifications and track-defining characteristics, if any, are shown;
- (b) the facility to be used for track guidance for final approach is clearly identified in the case of a procedure in which more than one station is located on the final approach track;
- (c) in addition, consideration is given to the elimination from the approach chart of those facilities that are not used by the procedure;
- (d) 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 are shown and identified;
- (e) the final approach fix or final approach point for an ILS approach procedure are identified with its geographical coordinates in degrees, minutes and seconds;
- (f) radio navigation aids that might be used in diversionary procedures together with their track-defining characteristics, if any, are shown or indicated on the chart;
- (g) radio communication frequencies, including call signs that are required for the execution

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of the procedures are shown;

- (h) the distance to the aerodrome from each radio navigation aid concerned with the final approach is shown to the nearest kilometre or nautical mile when required by the procedures and
- (i) the bearing is also be shown to the nearest degree when no track-defining aid indicates the bearing of the aerodrome.

Minimum sector
altitude or
terminal arrival
altitude

126. The aeronautical charts service provider shall ensure that the minimum sector altitude or terminal arrival altitude established is be shown, with a clear indication of the sector to which it applies.

Portrayal of
procedure tracks

127. The aeronautical charts service provider shall ensure that-

- (a) the plan view show in the manner indicated the following information-
 - (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 (a) and (b), by an arrowed dotted line;
 - (iv) bearings, tracks, radials to the nearest degree and distances to the nearest two-tenths of a kilometre 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;
- (vii) where specified, the holding pattern and minimum holding altitude/height associated with the approach and missed approach;
- (viii) caution notes where required, prominently displayed on the face of the chart and
- (ix) an indication of “flyover” significant points.
- (b) the plan view show the distance to the aerodrome from each radio navigation aid concerned with the final approach.
- (c) a profile is provided normally below the plan view showing the following data:
 - (i) the aerodrome by a solid block at aerodrome elevation;
 - (ii) the profile of the approach procedure segments by an arrowed continuous line indicating the direction of flight;
 - (iii) the profile of the missed approach procedure segment by an arrowed broken line and a description of the procedure;
 - (iv) the profile of any additional procedure segment, other than those specified in (b) and (c), by an arrowed dotted line;
 - (v) bearings, tracks, radials to the nearest degree and distances to the nearest two-tenths of a kilometre or tenth of a nautical mile or times required for the procedure;
 - (vi) altitudes/heights required by the procedures, including transition altitude and procedure altitudes/heights,- and heliport crossing height (HCH) where

- established;
- (vii) limiting distance to the nearest kilometre or nautical mile on procedure turn, when specified;
- (viii) the intermediate approach fix or point, on procedures where no course reversal is authorized;
- (ix) 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.
- (d) the heights required by procedures is shown in parentheses, using the height datum selected in accordance with regulation 123(e)(11.10.2.5.)
- (e) the profile view include a ground profile or a minimum altitude or height portrayal as follows:
 - (i) 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
 - (ii) minimum altitudes or heights in the intermediate and final approach segments indicated within bounded shaded blocks.

Aerodrome
operating
minima

128. The aeronautical charts service provider shall ensure that-

- (a) aerodrome operating minima when established by the (State) is shown;
- (b) the obstacle clearance altitudes/heights for

the aircraft categories for which the procedure is designed is shown; for precision approach procedures;

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

Supplementary
information

129. The aeronautical charts service provider shall ensure that-

- (a) when the missed approach point is defined by:
 - (i) a distance from the final approach fix is shown or
 - (ii) a facility or a fix and the corresponding distance from the final approach fix, the distance to the nearest two-tenths of a kilometre or tenth of a nautical mile and a table showing ground speeds and times from the final approach fix to the missed approach point is shown.
- (b) a table showing altitudes/heights for each 2 km or 1 NM is shown as appropriate when DME is required for use in the final approach segment;
- (c) the table is not include distances which would correspond to altitudes/heights below the OCA/H;
- (d) a table showing the altitudes or heights is included 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;
- (e) a rate of descent table is shown;

- (f) 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 is shown for non-precision approach procedures with a final approach fix;
- (g) the reference datum height to the nearest half metre or foot and the glide path or elevation or vertical path angle to the nearest one-tenth of a degree is shown for precision approach procedures and approach procedures with vertical guidance;
- (h) a clear indication is given 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;
- (i) in the case of MLS, a clear indication is given when an FAF has been specified at the final approach point; and
- (j) a cautionary note is included if the final approach descent gradient or angle for any type of instrument approach procedure exceeds the maximum value specified in the Procedures for Air Navigation Services - Aircraft Operations ICAO document 8158.

Aeronautical
database
requirements

130. The aeronautical charts service provider shall ensure that appropriate data to support navigation database coding is published in accordance with the Procedures for Air Navigation Services - Aircraft Operations Document 8158 for non-RNAV procedures, on the verso of the chart or as a separate, properly referenced sheet.

PART XII

INSTRUMENT APPROACH CHART - ICAO

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- | | |
|--------------|--|
| Function | 131. The aeronautical charts service provider shall ensure that the Visual Approach chart is provide flight crews with information which will enable them to transit from the en-route/descent to approach phases of flight to the runway of intended landing by means of visual reference. |
| Availability | 132. The aeronautical charts service provider shall ensure that The Visual Approach Chart - is made available in the manner specified in regulation 4(2)(1.3.2) for all aerodromes used by international civil aviation where- <ul style="list-style-type: none">(a) only limited navigation facilities are available; or(b) radio communication facilities are not available; or(c) no adequate aeronautical charts of the aerodrome and its surroundings at 1:500,000 or greater scale are available; or(d) visual approach procedures have been established. |
| Scale | 133. The aeronautical charts service provider shall ensure that- <ul style="list-style-type: none">(a) the scale is sufficiently large to permit depiction of significant features and indication of the aerodrome layout;(b) the scale is not be smaller than 1:500 000; and(c) the Visual Approach Chart is drawn to the same scale when an Instrument Approach Chart is available for a given aerodrome. |
| Format | 134. The aeronautical charts service provider shall ensure that the sheet size is 210 × 297 mm (8.27 x 11.69 inches) (A4). |
| Projection | 135. The aeronautical charts service provider |

shall ensure that-

- (a) a conformal projection on which a straight line approximates a great circle is used and
- (b) the graduation marks are placed at consistent intervals along the neat lines.

Identification

136. The aeronautical charts service provider shall ensure that the chart is identified by the name of the city or town which the aerodrome serves and the name of the aerodrome.

Culture and
topography

137. The aeronautical charts service provider shall ensure that-

- (a) natural and cultural landmarks are shown;
- (b) geographical place names are included only when they are required to avoid confusion or ambiguity;
- (c) shore lines, lakes, rivers and streams are shown;
- (d) relief is shown in a manner best suited to the particular elevation and obstacle characteristics of the area covered by the chart;
- (e) spot elevations is carefully selected when shown and
- (f) the figures relating to different reference levels are clearly differentiated in their presentation.

Magnetic
variation

138. The aeronautical charts service provider shall ensure that the magnetic variation is shown.

Bearings, tracks
and radials

139. The aeronautical charts service provider shall ensure that-

- (a) bearings, tracks and radials are magnetic except as provided for in paragraph (b)12.9.2;
- (b) in areas of high latitude, where it is

determined by the appropriate authority that reference to Magnetic North is impractical, another suitable reference True North or Grid North is used;

- (c) bearings, tracks or radials are clearly indicated where are given with reference to True North or Grid North; and
- (d) the reference grid meridian is identified when Grid North is used.

Aeronautical data

Aerodromes

140. The aeronautical charts service provider shall ensure that-

- (a) all aerodromes are shown by the runway pattern;
- (b) the restrictions on the use of any landing direction is indicated;
- (c) where there is any risk of confusion between two neighbouring aerodromes, this is indicated;
- (d) abandoned aerodromes are identified as abandoned; and
- (e) the aerodrome elevation is shown in a prominent position on the chart.

Obstacles

141. The aeronautical charts service provider shall ensure that-

- (a) obstacles are shown and identified;
- (b) the elevation of the top of obstacles is shown to the nearest next higher metre or foot;
- (c) the heights of obstacles above the aerodrome elevation are shown; and
- (d) the height datum is stated in a prominent position on the chart when the heights of obstacles are shown and the heights shall be given in parentheses on the chart.

Prohibited,

142. The aeronautical charts service provider

restricted and danger areas	shall ensure that prohibited areas, restricted areas, and danger areas are depicted with their identification and vertical limits.
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Designated airspace	143. The aeronautical charts service provider shall ensure that the control zones and aerodrome traffic zones are depicted with their vertical limits and the appropriate class of airspace, where applicable.
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Visual approach information	144. The aeronautical charts service provider shall ensure that- (a) visual approach procedures are shown, where applicable; (b) visual aids for navigation are shown as appropriate; (c) 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 centre line, the angle and direction of displacement, either left or right, are shown.
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Supplementary information	145. The aeronautical charts service provider shall ensure that- (a) radio navigation aids together with their frequencies and identifications are shown as appropriate and (b) radio communication facilities with their frequencies are shown as appropriate.
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PART XIII
AERODROME/HELIPORT CHART

Function	146. The aeronautical charts service provider shall ensure that the- (a) aerodrome or heliport chart provide flight
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crews with information which will facilitate the ground movement of aircraft:

- (i) from the aircraft stand to the runway; and
 - (ii) from the runway to the aircraft stand; and
- (b) aerodrome or heliport chart provide flight crews with information which will facilitate the helicopter movement:
- (i) from the helicopter stand to the touchdown and lift-off area and to the final approach and take-off area;
 - (ii) from the final approach and take-off area to the touchdown and lift-off area and to the helicopter stand;
 - (iii) along helicopter ground and air taxiways; and
 - (iv) along air transit routes.
- (c) aerodrome or heliport chart provide essential operational information at the aerodrome or heliport.

Availability

147. The aeronautical charts service provider shall ensure that the-

- (a) Aerodrome or Heliport Chart-ICAO is made available in the manner specified in Civil Aviation (Aerodrome) Regulation for all aerodromes or heliports regularly used by international civil aviation;
- (b) Aerodrome or Heliport Chart-ICAO is made available in the manner specified in Civil Aviation (Aerodrome) Regulation for all other aerodromes/heliports available for use by international civil aviation.

Coverage and scale

148. The aeronautical charts service provider shall ensure that-

- (a) the coverage and scale are sufficiently large

- to show clearly all the elements listed in regulation 146;
(b) a linear scale is shown.

Identification

149. The aeronautical charts service provider shall ensure that the chart is identified by the name of the city or town or area which the aerodrome/heliport serves and the name of the aerodrome/heliport

Magnetic variation

150. The aeronautical charts service provider shall ensure that the True and Magnetic North arrows and magnetic variation to the nearest degree and annual change of the magnetic variation are shown.

Aerodrome/heliport data

151. The aeronautical charts service provider shall ensure that-

(a) this chart show:

- (i) geographical coordinates in degrees, minutes and seconds for the aerodrome/heliport reference point;
- (ii) elevations, to the nearest metre or foot, of the aerodrome/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;
- (iii) elevations and geoid undulations, to the nearest half-metre 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;

- (iv) all runways including those under construction with designation number, length and width to the nearest metre, bearing strength, displaced thresholds, stopways, clearways, runway directions to the nearest degree magnetic, type of surface and runway markings;
- (v) 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;
- (vi) 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);
- (vii) 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;
- (viii) where established, hot spot locations with additional information properly annotated;
- (ix) geographical coordinates in degrees, minutes, seconds and hundredths of seconds for appropriate taxiway centre line points and aircraft stands;
- (x) where established, standard routes for taxiing aircraft with their designators;
- (xi) the boundaries of the air traffic control service;
- (xii) position of runway visual range (RVR) observation sites;
- (xiii) approach and runway lighting;
- (xiv) 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;
- (xv) relevant communication facilities listed with their channels and, if applicable, logon address;
- (xvi) obstacles to taxiing;
- (xvii) aircraft servicing areas and buildings of operational significance;
- (xviii) VOR checkpoint and radio frequency of the aid concerned;
- (xix) any part of the depicted movement area permanently unsuitable for aircraft, clearly

identified as such.

(b) In addition to the items in regulation 146(1)13.6.1 relating to heliports, the chart show:

- (i) heliport type;
- (ii) touchdown and lift-off area including dimensions to the nearest metre, slope, type of surface and bearing strength in tonnes;
- (iii) final approach and take-off area including type, true bearing to the nearest degree, designation number (where appropriate), length and width to the nearest metre, slope and type of surface;
- (iv) safety area including length, width and type of surface;
- (v) helicopter clearway including length and ground profile;
- (vi) obstacles including type and elevation of the top of the obstacles to the nearest (next higher) metre or foot;
- (vii) visual aids for approach procedures, marking and lighting of final approach and take-off area, and of touchdown and lift-off area;
- (viii) declared distances to the nearest metre for heliports, where relevant, including:
 - (aa) take-off distance available;
 - (bb) rejected take-off distance available;
 - (cc) landing distance available.

PART XIV

AERODROME GROUND MOVEMENT CHART

Function

152. The aeronautical charts service provider

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

Availability

153. The aeronautical charts service provider shall ensure that the Aerodrome Ground Movement Chart-ICAO is made available in the manner specified in regulation 4(2)1.3.2 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/Heliport Chart-ICAO.

Coverage and
scale

154. The aeronautical charts service provider shall ensure that-

- (a) the coverage and scale are sufficiently large to show clearly all the elements listed in regulation 157. 14.6; and
- (b) a linear scale is shown.

Identification

155. The aeronautical charts service provider shall ensure that the chart shall be identified by the name of the city or town or area which the aerodrome serves and the name of the aerodrome.

Magnetic
variation

156. The aeronautical charts service provider shall ensure that-

- (a) A True North arrow is shown and
- (b) Magnetic variation to the nearest degree and its annual change are shown.

Aerodrome
data

157. The aeronautical charts service provider shall ensure that this chart show in a similar manner all the information on the Aerodrome or Heliport Chart - ICAO relevant to the area depicted, including:

- (a) apron elevation to the nearest metre or foot;
- (b) 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;
- (c) geographical coordinates in degrees, minutes, seconds and hundredths of seconds for aircraft stands;
 - (d) taxiways with designations, width to the nearest metre, 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;
 - (e) where established, hot spot locations with additional information properly annotated;
 - (f) where established, standard routes for taxiing aircraft, with their designators;
 - (g) geographical coordinates in degrees, minutes, seconds and hundredths of seconds for appropriate taxiway centre line points;
 - (h) the boundaries of the air traffic control service;
 - (i) relevant communication facilities listed with their channels and, if applicable, logon address;
 - (j) obstacles to taxiing;
 - (k) aircraft servicing areas and buildings of operational significance;
 - (l) VOR checkpoint and radio frequency of the aid concerned;
 - (m) any part of the depicted movement area permanently unsuitable for aircraft, clearly identified as such.

PART XV

AIRCRAFT PARKING/DOCKING CHART - ICAO

Function	158. The aeronautical charts service provider shall ensure that supplementary chart 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.
Availability	159. The aeronautical charts service provider shall ensure that Aircraft Parking/Docking Chart - ICAO made available in the manner prescribed in regulation 4(b) 1.3.2 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.
Coverage and scale	160. The aeronautical charts service provider shall ensure that the coverage and scale are sufficiently large to show clearly all the elements listed in regulation 164 (15.6).
Identification	161. The aeronautical charts service provider shall ensure that the chart is identified by the name of the city or town or area which the aerodrome serves and the name of the aerodrome.
Magnetic variation	162. 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.
Aerodrome data	163. The aeronautical charts service provider shall ensure that this chart show in a similar manner all the information on the Aerodrome/Heliport Chart - ICAO and the Aerodrome Ground Movement Chart - ICAO relevant to the area depicted, including:

- (a) apron elevation to the nearest metre or foot;
- (b) 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;
- (c) geographical coordinates in degrees, minutes, seconds and hundredths of seconds for aircraft stands;
- (d) taxiway entries with designations, including runway-holding positions and, where established, intermediate holding positions, and stop bars;
- (e) where established, hot spot locations with additional information properly annotated;
Note.- Additional information regarding hot spots may be shown in tabular form on the face or verso of the chart.
- (f) geographical coordinates in degrees, minutes, seconds and hundredths of seconds for appropriate taxiway centre line points;
- (g) the boundaries of the air traffic control service;
- (h) relevant communication facilities listed with their channels and, if applicable, logon address;
- (i) obstacles to taxiing;
- (j) aircraft servicing areas and buildings of operational significance;
- (k) VOR checkpoint and radio frequency of the aid concerned;
- (l) any part of the depicted movement area permanently unsuitable for aircraft, clearly identified as such.

PART XVI

WORLD AERONAUTICAL CHART-ICAO 1:1 000 000

- Function 164. The aeronautical charts service provider shall ensure that the World Aeronautical chart – 1:1,000,000 provide information to satisfy the requirements of visual air navigation.
- (a) as a basic aeronautical chart:
 - (i) when highly specialized charts lacking visual information do not provide essential data;
 - (ii) to provide complete world coverage at a constant scale with a uniform presentation of planimetric data;
 - (iii) in the production of other charts required by international civil aviation;
 - (b) as a pre-flight planning chart.
- Availability 165. The aeronautical charts service provider shall ensure that-
- (a) the World Aeronautical Chart - ICAO 1:1 000 000 is made available in the manner specified in regulation 4(2) for all areas delineated in fifth Schedule;
 - (b) 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.
- Scales 166. The aeronautical charts service provider shall ensure that-
- (a) linear scales for kilometres and nautical miles arranged with their zero points in the same vertical line is shown in the margin in the following order:
 - (i) kilometers;
 - (ii) nautical miles,
 - (b) the length of the linear scales represent at least 200 km (110 NM); and

- (c) a conversion scale in metre or feet is shown in the margin.

Format

167. The aeronautical charts service provider shall ensure that-

- (a) the title and marginal notes is in English;
- (b) 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;
- (c) the method of folding is as follows:
 - (i) fold the chart on the long axis near the mid-parallel of latitude; face out, with the bottom part of the chart face upward.
 - (ii) fold inward near the meridian, and fold both halves backward in accordion folds.
- (d) the sheet lines conform with those shown in the index in fifth Schedule, whenever practicable;
- (e) the sheet lines used is notified to ICAO for publication in the ICAO Aeronautical Chart Catalogue;
- (f) overlaps are provided by extending the chart area on the top and right side beyond the area given on the index;
- (g) the overlap area contain all aeronautical, topographical, hydrographical and cultural information and
- (h) 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.

Projection

168. The aeronautical charts service provider shall ensure that

- (a) the projection is between the Equator and 80°

latitude: the Lambert conformal conic projection, in separate bands for each tier of charts. The standard parallels for each 4° band shall be 40 ' south of the northern parallel and 40 ' north of the southern parallel;

- (b) graticules and graduations is shown as follows:

(i) Parallels:

Latitude	Distance between Parallels	Graduation on Parallels
0 to 72°	30'	1'
72° to 84°	30'	5'
84° to 89°	30'	1°
89° to 90°	30'	5°
(only on degree parallels from 72° to 89°)		

Meridians:

Latitude	Distance between Parallels	Graduation on Parallels
0 to 52°	30'	1'
52° to 72°	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)		

- (c) 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;
- (d) the length of the graduation marks are 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;

- (e) all meridians and parallels shown are numbered in the borders of the chart;
- (f) 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
- (g) the name and basic parameters of the projection are indicated in the margin.

Identification

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

Culture and topography

Built-up areas

170. The aeronautical charts service provider shall ensure that-

- (a) Cities, towns and villages are selected and shown according to their relative importance to visual air navigation;
- (b) Cities and towns of sufficient size are indicated by the outline of their built-up areas and not of their established city limits.

Railroads

171. The aeronautical charts service provider shall ensure that-

- (a) all railroads having landmark value are shown.
- (b) important tunnels are shown.

Highways and roads

172. The aeronautical charts service provider shall ensure that-

- (a) the road systems are shown in sufficient detail to indicate significant patterns from the air.

- (b) roads are not be shown in built-up areas unless they can be distinguished from the air as definite landmarks.

Landmarks

173. The aeronautical charts service provider shall ensure that 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.

Political boundaries

174. The aeronautical charts service provider shall ensure that international boundaries are shown. Undemarcated and undefined boundaries are distinguished by descriptive notes.

Hydrography

175. The aeronautical charts service provider shall ensure that-

- (a) all water features compatible with the scale of the chart comprising shore lines, lakes, rivers and streams including those non-perennial in nature, salt lakes, glaciers and ice caps are shown;
- (b) the tint covering large open water areas is kept very light; and
- (c) 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.

Contours

176. The aeronautical charts service provider shall ensure that-

- (a) contours are shown and the selection of intervals shall be governed by the requirement to depict clearly the relief features required in air navigation;
- (b) the values of the contours used are shown.

Hypsometric
tints

177. The aeronautical charts service provider shall ensure that-

- (a) the range of elevations for the tints is shown when hypsometric tints are used;
- (b) the scale of the hypsometric tints used on the chart is shown in the margin.

Spot elevations

178. The aeronautical charts service provider shall ensure that-

- (a) spot elevations are shown at selected critical points and the elevations selected always be the highest in the immediate vicinity and shall generally indicate the top of a peak and ridge;
- (b) elevations in valleys and at lake surface level which are of special value to the aviator are shown and the position of each selected elevation shall be indicated by a dot;
- (c) the elevation of the highest point on the chart and its geographical position to the nearest five minutes are indicated in the margin; and
- (d) the spot elevation of the highest point in any sheet shall be cleared of hypsometric tinting.

Incomplete or
unreliable relief

179. The aeronautical charts service provider shall ensure that-

- (a) the areas that have not been surveyed for contour information are labelled "Relief data incomplete";
- (b) the Charts on 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:

"Warning - The reliability of relief information on this chart is doubtful and elevations shall be used with caution."

- Escarpments 180. The aeronautical charts service provider shall ensure that escarpments are shown when they are prominent landmarks or when cultural detail is very sparse.
- Wooded areas 181. The aeronautical charts service provider shall ensure that The range of elevations-
- (a) wooded areas shall be shown;
 - (b) the approximate extreme northern or southern limits of tree growth shall be indicated by a dashed black line where shown and shall be appropriately labelled.
- Date of topographic information 182. The aeronautical charts service provider shall ensure that the date of latest information shown on the topographic base is indicated in the margin.
- Magnetic variation 183. The aeronautical charts service provider shall ensure that-
- (a) isogonic lines are shown; and
 - (b) the date of the isogonic information is indicated in the margin.

Aeronautical data

- General 184. The aeronautical charts service provider shall ensure that aeronautical data shown are kept to a minimum consistent with the use of the chart for visual navigation and the revision cycle.
- Aerodromes 185. The aeronautical charts service provider shall ensure that-
- (a) land and water aerodromes and heliports are shown 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;

- (b) the aerodrome elevation, the lighting available, the type of runway surface and the length of the longest runway or channel, shown in abbreviated form for each aerodrome in conformity with the example given in second schedule, is indicated provided they do not cause undesirable clutter on the chart; and
- (c) abandoned aerodromes which are still recognizable as aerodromes from the air are shown and identified as abandoned.

Obstacles

186. The aeronautical charts service provider shall ensure that-

- (a) obstacles are shown;
- (b) prominent transmission lines, permanent cable car installations and wind turbines, which are obstacles, are shown when considered of importance to visual flight.

Prohibited,
restricted and
danger areas

187. The aeronautical charts service provider shall ensure that prohibited, restricted and danger areas are shown.

Air traffic
services system

188. The aeronautical charts service provider shall ensure that-

- (a) 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 are shown together with the appropriate class of airspace; and
- (b) the air defense identification zone are shown where appropriate and properly identified.

Radio

189. The aeronautical charts service provider

navigation aids shall ensure that radio navigation aids are shown 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 which is shown is kept up to date by means of new editions of the chart.

Supplementary information 190. The aeronautical charts service provider shall ensure that-

- (a) the aeronautical ground lights together with their characteristics or their identifications or both are shown.
- (b) the marine lights on outer prominent coastal or isolated features of not less than 28 km (15 NM) visibility range are shown where they are:
 - (i) not less distinguishable than more powerful marine lights in the vicinity;
 - (ii) readily distinguishable from other marine or other types of lights in the vicinity of built-up coastal areas and
 - (iii) the only lights of significance available.

PART XVII

AERONAUTICAL CHART - ICAO 1:500 000

Function 191. The aeronautical charts service provider shall ensure that the aeronautical chart - 1: 500,000 provide information to satisfy the requirements of visual air navigation for low speed, short - or medium-range operations at low and intermediate altitudes.

Availability 192. The aeronautical charts service provider shall ensure that the Aeronautical Chart - ICAO 1:500 000 is made available in the manner specified in regulation 4(2) for all areas delineated in fifth Schedule.

Scales

193. The aeronautical charts service provider shall ensure that-

(a) the linear scales for kilometres and nautical miles arranged in the following order:

(i) kilometres,

(ii) nautical miles,

with their zero points in the same vertical line is shown in the margin;

(b) the length of the linear scale is not less than 200 mm (8 in); and

(c) a conversion scale is shown in the margin.

Format

194. The aeronautical charts service provider shall ensure that-

(a) the title and marginal notes is in English;

(b) 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;

(c) the method of folding is as follows:

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

(ii) fold inward near the meridian; and

(iii) fold both halves backward in accordion folds.

(d) the sheets are quarter sheets of the World Aeronautical Chart - ICAO 1:1 000 000 whenever practicable;

(e) an appropriate index to adjacent sheets, showing the relationship between the two chart series is included on the face of the chart or on the reverse side;

(f) the overlaps are provided by extending the chart area on the top and right side beyond the area given on the index;

(g) the overlap area in paragraph(f) contain all

aeronautical, topographical, hydrographical and cultural information; and

- (h) 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.

Projection

195. The aeronautical charts service provider shall ensure that-

- (a) a conformal projection is used;
- (b) the projection of the World Aeronautical Chart - 1:1 000 000 is used;
- (c) the Parallels are shown at intervals of 30';
- (d) the meridians are shown at intervals of 30';
- (e) the graduation marks is 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;
- (f) 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;
- (g) the meridians and parallels shown shall be numbered in the borders of the chart.
- (h) each meridian and parallel are numbered within the body of the chart whenever this data is required operationally.
- (i) the name and basic parameters of the projection is indicated in the margin.

Identification

196. The aeronautical charts service provider shall ensure that-

- (a) each sheet is identified by a name of the principal town or of a main geographical

feature appearing on the sheet.

- (b) the sheets are identified 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

Culture and topography

Built-up areas 197. The aeronautical charts service provider shall ensure that-

- (a) the cities, towns and villages are selected and shown according to their relative importance to visual air navigation; and
(b) the cities and towns of sufficient size are indicated by the outline of their built-up areas and not of their established city limits.

Railroads 198. The aeronautical charts service provider shall ensure that-

- (a) all railroads having landmark value are shown; and
(b) the tunnels are shown when they serve as prominent landmarks.

Highways and roads 199. The aeronautical charts service provider shall ensure that-

- (a) the road systems are shown in sufficient detail to indicate significant patterns from the air; and
(b) the roads not shown in built-up areas unless they can be distinguished from the air

as definite landmarks.

Landmarks

200. 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, lookout towers, forts, ruins, levees, pipelines, rocks, bluffs, cliffs, sand dunes, isolated lighthouses and lightships are shown when considered to be of importance for visual air navigation.

Political
boundaries

201. The aeronautical charts service provider shall ensure that-

- (a) the international boundaries are shown; and
- (b) the Undemarcated and undefined boundaries are distinguished by descriptive notes.

Hydrography

202. The aeronautical charts service provider shall ensure that-

- (a) all water features compatible with the scale of the chart comprising shore lines, lakes, rivers and streams including those non-perennial in nature, salt lakes, glaciers and ice caps are shown;
- (b) the tint covering large open water areas is kept very light; and
- (c) the 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.

Contours

203. The aeronautical charts service provider shall ensure that-

- (a) the Contours are shown and the selection of intervals shall be governed by the requirement to depict clearly the relief features required in air navigation; and
- (b) the values of the contours used are shown.

Hypsometric
tints

204. The aeronautical charts service provider shall ensure that-

- (a) the range of elevations for the tints is shown when hypsometric tints are used; and
- (b) the scale of the hypsometric tints used on the chart is shown in the margin.

Spot elevations

205. The aeronautical charts service provider shall ensure that-

- (a) the spot elevations are shown at selected critical points;
- (b) the elevations selected are the highest in the immediate vicinity and indicate the top of a peak and ridge;
- (c) the elevations in valleys and at lake surface levels which are of navigational value are shown and the position of each selected elevation shall be indicated by a dot;
- (d) the elevation of the highest point on the chart and its geographical position to the nearest five minutes is indicated in the margin; and
- (e) the spot elevation of the highest point on any sheet is cleared of hypsometric tinting.

Incomplete or
unreliable relief

206. The aeronautical charts service provider shall ensure that-

- (a) the areas that have not been surveyed for contour information are labelled "Relief data incomplete" and
- (b) 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."

- Escarpments 207. The aeronautical charts service provider shall ensure that the escarpments are shown when they are prominent landmarks or when cultural detail is very sparse.
- Wooded areas 208. The aeronautical charts service provider shall ensure that-
- (a) the wooded areas are shown;
 - (b) the approximate northern or southern limits of tree growth shall be indicated by a dashed black line where shown, and are appropriately labelled.
- Date of topographic information 209. The aeronautical charts service provider shall ensure that the date of latest information shown on the topographic base is indicated in the margin.
- Magnetic variation 210. The aeronautical charts service provider shall ensure that-
- (a) the isogonic lines are shown; and
 - (b) the date of the isogonic information is indicated in the margin.

Aeronautical data

- General Information 211. The aeronautical charts service provider shall ensure that the aeronautical charts is shown consistent with the use of the chart and the revision cycle.
- Aerodromes 212. The aeronautical charts service provider shall ensure that-
- (a) the land and water aerodromes and heliports are shown 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;

- (b) the aerodrome elevation, the lighting available, the type of runway surface and the length of the longest runway or channel, shown in abbreviated form for each aerodrome in conformity with the example given in Second Schedule, provided they do not cause undesirable clutter on the chart, are indicated; and
- (c) the abandoned aerodromes which are still recognizable as aerodromes from the air are shown and identified as abandoned.

Obstacles

213. The aeronautical charts service provider shall ensure that-

- (a) the obstacles are shown and
- (b) the prominent transmission lines, permanent cable car installations and wind turbines, which are obstacles are shown when considered of importance to visual flight.

Prohibited,
restricted and
danger areas

214. The aeronautical charts service provider shall ensure that the prohibited, restricted and danger areas shall are shown.

Air traffic
services system

215. The aeronautical charts service provider shall ensure that-

- (a) the 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 are shown together with the appropriate class of airspace, where practicable; and
- (b) the air defence identification zone (ADIZ) are shown and properly identified where

appropriate.

Radio
navigation aids

216. The aeronautical charts service provider shall ensure that the radio navigation aids are all be shown 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 which is shown is kept up to date by means of new editions of the chart.

Supplementary
information

217. The aeronautical charts service provider shall ensure that-

- (a) the aeronautical ground lights together with their characteristics or their identifications or both are shown and
- (b) the marine lights on outer prominent coastal or isolated features of not less than 28 km (15 NM) visibility range are shown where they are:
 - (i) not less distinguishable than more powerful marine lights in the vicinity;
 - (ii) readily distinguishable from other marine or other types of lights in the vicinity of built-up coastal areas;
 - (iii) the only lights of significance available.

PART XVIII

AERONAUTICAL NAVIGATION CHART - SMALL SCALE

Function

218. The aeronautical charts service provider shall ensure that the aeronautical navigation chart – small scale-

- (a) serve as an air navigation aid for flight crews of long-range aircraft at high altitudes;
- (b) provide selective checkpoints over extensive ranges for identification at high altitudes and

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- speeds, which are required for visual confirmation of position;
- (c) 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;
- (d) provide a general purpose chart series for long-range flight planning and
- Availability 219. The aeronautical charts service provider shall ensure that the Aeronautical Navigation Chart - Small Scale shall be made available in the manner specified in regulation 4(b) for all areas delineated in fifth schedule.
- Coverage and scale 220. The aeronautical charts service provider shall ensure that-
- (a) the Aeronautical Navigation Chart - Small Scale provide as a minimum, complete coverage of the major land masses of the world;
- (b) the scale is in the range of 1:2 000 000 to 1:5 000 000;
- (c) the scale of the chart is substituted in the title for the words "Small Scale";
- (d) the Linear scales for kilometres and nautical miles arranged in the following order-
- (i) kilometers;
- (ii) nautical miles,
- with their zero points in the same vertical line are shown in the margin;
- (e) the length of the linear scale shall be not less than 200 mm (8 in) and
- (f) a conversion scale in metre or feet is shown in the margin.
- Format 221. The aeronautical charts service provider

shall ensure that-

- (a) the title and marginal notes are in English; and
- (b) 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.

Projection

222. The aeronautical charts service provider shall ensure that-

- (a) a conformal projection is used;
- (b) the name and basic parameters of the projection is shown in the margin;
- (c) parallels are shown at intervals of 1°;
- (d) graduations on the parallels are shown at sufficiently close intervals compatible with the latitude and the scale of the chart;
- (e) meridians are shown at intervals compatible with the latitude and the scale of the chart;
- (f) graduations on the meridians are shown at intervals not exceeding 5';
- (g) the graduation marks extend away from the Greenwich Meridian and from the Equator;
- (h) all meridians and parallels shown are numbered in the borders of the chart; and
- (i) 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.

Culture and topography

Built-up areas

223. The aeronautical charts service provider shall ensure that-

- (a) the cities, towns and villages are selected and shown according to their relative importance to visual air navigation; and
- (b) the cities and towns of sufficient size are

indicated by the outline of their built-up areas and not of their established city limits.

Railroads

224. The aeronautical charts service provider shall ensure that-

- (a) all railroads having landmark value shall be shown; and
- (b) important tunnels shall be shown.

Highways and roads

225. The aeronautical charts service provider shall ensure that-

- (a) the road systems are shown in sufficient detail to indicate significant patterns from the air; and
- (b) the roads are not be shown in built-up areas unless they can be distinguished from the air as definite landmarks.

Landmarks

226. The aeronautical charts service provider shall ensure that the 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 are shown, when considered to be of importance for visual air navigation.

Political boundaries

227. The aeronautical charts service provider shall ensure that the international boundaries are shown and the undemarcated including undefined boundaries are distinguished by descriptive notes.

Hydrography

228. The aeronautical charts service provider shall ensure that-

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

- (b) the tint covering large open water areas is kept very light; and
- (c) the 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.

Contours

229. The aeronautical charts service provider shall ensure that-

- (a) the contours are shown and the selection of intervals shall be governed by the requirement to depict clearly the relief features required in air navigation; and
- (b) the values of the contours used are shown.

Hypsometric tints

230. The aeronautical charts service provider shall ensure that-

- (a) the range of elevations for the tints are shown when hypsometric tints are used;
- (b) the scale of the hypsometric tints used on the chart is shown in the margin.

Spot elevations

231. The aeronautical charts service provider shall ensure that the-

- (a) spot elevations is shown at selected critical points;
- (b) the elevations selected always be the highest in the immediate vicinity and shall indicate the top of a peak or ridge;
- (c) elevations in valleys and at lake surface levels which are of value to visual air navigation are shown and the position of each selected elevation are indicated by a dot;
- (d) elevation of the highest point on the chart and its geographical position to the nearest five minutes is indicated in the margin; and
- (e) spot elevation of the highest point in any

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sheet is cleared of hypsometric tinting.

Incomplete or
unreliable relief

232. The aeronautical charts service provider shall ensure that-

- (a) the areas that have not been surveyed for contour information are labelled “Relief data incomplete”;
- (b) 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 charts, as follows:

“Warning- the reliability of relief information on this chart is doubtful and elevations shall be used with caution.”

Escarpments

233. The aeronautical charts service provider shall ensure that the escarpments are shown when they are prominent landmarks or when cultural detail is very sparse

Wooded areas

234. The aeronautical charts service provider shall ensure that the wooded areas of large extent are shown.

Date of
topographic
information

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

Colours

236. The aeronautical charts service provider shall ensure that-

- (a) the subdued colours are used for the chart background to facilitate plotting; and
- (b) good colour contrast is ensured to emphasize features important to visual air navigation.

Magnetic
variation

237. The aeronautical charts service provider shall ensure that-

- (a) isogonic lines are shown; and
- (b) the date of isogonic information shall be indicated in the margin.

Aeronautical data

- | | |
|---|---|
| Aerodromes | 238. The aeronautical charts service provider shall ensure that the land and water aerodromes and heliports are shown 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. |
| Obstacles | 239. The aeronautical charts service provider shall ensure that the obstacles are shown. |
| Prohibited, restricted and danger areas | 240. The aeronautical charts service provider shall ensure that the prohibited, restricted and danger areas are shown when considered to be of importance to air navigation. |
| Air traffic services system | 241. The aeronautical charts service provider shall ensure that- <ul style="list-style-type: none">(a) the significant elements of the air traffic services system are shown when considered to be of importance to air navigation; and(b) the air defence identification zone (ADIZ) are shown and properly identified where appropriate. |

PART IXX
PLOTING CHART - ICAO

- | | |
|----------|---|
| Function | 242. The Aeronautical charts service provider |
|----------|---|

shall ensure that the plotting chart 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.

Availability

243. The Aeronautical charts service provider shall ensure that the plotting chart-ICAO is made available, in the manner prescribed in regulation 4(b) to cover major air routes over oceanic areas and sparsely settled areas used by international civil aviation

Coverage and
scale

244. The Aeronautical charts service provider shall ensure that the-

- (a) chart for a particular region covers major air routes and their terminals on a single sheet, where practicable;
- (b) scale is governed by the area to be covered.

Format

245. 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.

Projection

246. A conformal projection on which a straight line approximates a great circle is used-

- (a) parallels and meridians are shown;
- (b) the intervals are arranged to permit accurate plotting to be carried out with a minimum of time and effort;
- (c) graduation marks are shown at consistent intervals along an appropriate number of parallels and meridians and the interval selected is, regardless of scale, minimize the amount of interpolation required for accurate plotting;
- (d) parallels and meridians are numbered so that a number appears at least once every 15 cm (6 in) on the face of the chart;

- | | |
|------------------------|---|
| Identification | 247. The Aeronautical charts service provider shall ensure that each sheet is identified by chart series and number. |
| Culture and topography | 248. The Aeronautical charts service provider shall ensure that the- <ul style="list-style-type: none">(a) generalized shore lines of all open water areas, large lakes and rivers are shown;(b) spot elevations for selected features constituting a hazard to air navigation are shown;(c) particularly hazardous or prominent relief features are emphasized. |
| Magnetic variation | 249. The Aeronautical charts service provider shall ensure that the- <ul style="list-style-type: none">(a) isogonals are shown at consistent intervals throughout the chart and the interval selected is, regardless of scale, minimize the amount of interpolation required;(b) date of the isogonic information shall be shown. |
| Aeronautical data | 250. The Aeronautical charts service provider shall ensure that the following aeronautical data are shown- <ul style="list-style-type: none">(a) aerodromes regularly used by international commercial air transport together with their names;(b) selected radio aids to navigation that will contribute to position-finding together with their names and identifications;(c) lattices of long-range electronic aids to navigation, as required;(d) boundaries of flight information regions, control areas and control zones necessary to the function of the chart;(e) designated reporting points necessary to the |

- function of the chart;
- (f) ocean station vessels.
- (g) aeronautical ground lights and marine lights useful for air navigation are shown where other means of navigation are non-existent.

PART XX

ELECTRONIC AERONAUTICAL CHART DISPLAY - ICAO

Function 251. The Aeronautical charts service provider shall ensure that 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, enables flight crews to execute, in a convenient and timely manner, route planning, route monitoring and navigation by displaying required information.

Information available for display 252. 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 Chapter 5 and Chapters 7 through 19.

Display requirements

Display categories 253. The Aeronautical charts service provider shall ensure that the-

- (a) information available for display is subdivided into the following categories:
 - (i) basic display information, permanently retained on the display and consisting of the minimum information essential for the safe conduct of flight; and
 - (ii) 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.

- (b) it is a simple function to add or remove other display information but is not possible to remove information contained in the basic display.

Display mode
and generation
of neighbouring
area

254. The Aeronautical charts service provider shall ensure that the-

- (a) 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.
- (b) it is possible manually to change the chart area and the position of the aircraft relative to the edge of the display.

Scale

255. The Aeronautical charts service provider shall ensure that it is possible to vary the scale at which a chart is displayed.

Symbols

256. The Aeronautical charts service provider shall ensure that-

- (a) the symbols used 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.
- (b) In cases where no ICAO chart symbols are provided, electronic chart symbols are chosen which:
 - (i) employ a minimum use of lines, arcs and area fills;
 - (ii) do not cause confusion with any

- existing aeronautical chart symbol;
- (iii) do not impair the legibility of the display.

Display
hardware

257. The Aeronautical charts service provider shall ensure that the-

- (a) effective size of the chart presentation is sufficient to display the information required by regulation 242 without excessive scrolling;
- (b) display has the capabilities required to accurately portray required elements of second schedule - ICAO Chart Symbols;
- (c) 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;
- (d) display luminance is adjustable by the flight crew.

Provision and
updating of data

258. The Aeronautical charts service provider shall ensure that-

- (a) the provision and updating of data for use by the display is in conformance with the aeronautical data quality system requirements;
- (b) 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;
- (c) 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;
- (d) a record is kept of all updates, including date and time of application;
- (e) 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.

Performance
tests,
malfunction
alarms and
indications

259. The Aeronautical charts service provider shall ensure that the-

- (a) a means is provided 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.
- (b) a suitable alarm or indication of system malfunction is provided.

Back-up
arrangements

260. The Aeronautical charts service provider shall ensure that to ensure safe navigation in case of a failure of the Electronic Aeronautical Chart Display-ICAO, the provision of adequate back-up arrangements include-

- (a) facilities enabling a safe takeover of display functions in order to ensure that a failure does not result in a critical situation; and
- (b) a back-up arrangement facilitating the means for safe navigation of the remaining part of the flight.

PART XXI

ATC SURVEILLANCE MINIMUM ALTITUDE CHART-ICAO

Function

261. The Aeronautical charts service provider shall ensure that-

- (a) 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;

- (b) 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.

Availability

262. The Aeronautical charts service provider shall ensure that the ATC Surveillance Minimum Altitude Chart-ICAO is made available, in the manner prescribed in regulation 4(2) 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.

Coverage and
scale

263. The Aeronautical charts service provider shall ensure that the-

- (a) coverage of the chart is sufficient to effectively show the information associated with vectoring procedures;
- (b) the chart shall be drawn to scale;
- (c) the chart shall be drawn to the same scale as the associated Area Chart-ICAO.

Projection

264. The Aeronautical charts service provider shall ensure that the-

- (a) a conformal projection on which a straight line approximates a geodesic line is used;
- (b) graduation marks are placed at consistent intervals along the neat lines, as appropriate.

Identification

265. The Aeronautical charts service provider shall ensure that the chart is identified 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

Culture and
topography

266. The Aeronautical charts service provider shall ensure that-

- (a) generalized shorelines of all open water areas, large lakes and rivers are shown except where they conflict with data more applicable to the function of the chart;
- (b) appropriate spot elevations and obstacles shall be shown.

Magnetic
variation

267. The Aeronautical charts service provider shall ensure that the average magnetic variation of the area covered by the chart is shown to the nearest degree.

Bearings, tracks
and radials

268. The Aeronautical charts service provider shall ensure that-

- (a) the Bearings, tracks and radials are magnetic;
- (b) Where bearings, tracks or radials are given with reference to True North or Grid North, this shall be clearly indicated and where Grid North is used, its reference grid meridian is identified.

Aeronautical data

Aerodromes

269. The Aeronautical charts service provider shall ensure that-

- (a) all aerodromes that affect the terminal routings are shown and where appropriate, a runway pattern symbol is used;
- (b) the elevation of the primary aerodrome to the nearest metre or foot is shown.

Prohibited,
restricted and
danger areas

270. The Aeronautical charts service provider shall ensure that the prohibited, restricted and danger areas are depicted with their identification.

Air traffic
services system

271. The Aeronautical charts service provider shall ensure that-

- (a) the chart shows components of the established air traffic services system including:
 - (i) relevant radio navigation aids together with their identifications;
 - (ii) lateral limits of relevant designated airspace;
 - (iii) relevant significant points associated with standard instrument departure and arrival procedures;
 - (iv) transition altitude, where established;
 - (v) information associated with vectoring including:
 - (aa) minimum vectoring altitudes to the nearest higher 50 m or 100 ft, clearly identified;
 - (bb) lateral limits of minimum vectoring altitude sectors 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;
 - (cc) 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;
- (dd) notes concerning correction for
low temperature effect, as
applicable;
- (ee) communications procedures
including call sign(s) and
channel(s) of the ATC unit(s)
concerned;
- (b) a textual description of relevant
communication failure procedures are
provided and shall, whenever feasible, be
shown on the chart or on the same page that
contains the chart.

PART X EXEMPTIONS

Requirements
for
application
for exemption

272.-(1) A person may apply to the Authority for an exemption from any provision of these Regulations.

(2) Unless in case of emergency, a person requiring exemption from any provision of these Regulations shall make an application to the Authority at least sixty days prior to the proposed effective date, giving the following information-

- (a) name and contact address including electronic mail and fax if any;
- (b) telephone number;
- (c) a citation of the specific requirement from which the applicant seeks exemption;
- (d) justification for the exemption;
- (e) a description of the type of operations to be conducted under the proposed exemption;
- (f) the proposed duration of the exemption;
- (g) an explanation of how the exemption would be in the public interest;

- (h) a detailed description of the alternative means by which the applicant will ensure a level of safety equivalent to that established by the regulation in question;
- (i) a safety risk assessment carried out in respect of the exemption applied for;
- (j) if the applicant handles international operations and seeks to operate under the proposed exemption, an indication whether the exemption would contravene any provision of the Standards and Recommended Practices of the International Civil Aviation Organization (ICAO); and
- (k) any other information that the Authority may require.

(3) Where the applicant seeks emergency processing of an application for exemption, the application shall contain supporting facts and reasons for not filing the application within the time specified in sub regulation (2) and satisfactory reason for deeming the application an emergency.

(4) The Authority may in writing, refuse an application made under sub regulation (3), where in the opinion of the Authority, the reasons given for emergency processing are not satisfactory.

(5) The application for exemption shall be accompanied by fee prescribed by the Authority.

Review and
publication.

273.-(1) The Authority shall review the application for exemption made under regulation 52 for accuracy and compliance and if the application is satisfactory, the Authority shall publish a detailed summary of the application for comments, within a prescribed time, in either-

- (a) aeronautical information circular; or
- (b) a daily newspaper with national circulation.

(2) Where application requirements have not been fully complied with, the Authority shall request the

applicant in writing, to comply prior to publication or making a decision under sub regulation (3).

(3) If the request is for emergency relief, the Authority shall publish the decision as soon as possible after processing the application.

Evaluation of
the request

274.-(1) Where the application requirements have been satisfied, the Authority shall conduct an evaluation of the request to include-

- (a) determination of whether an exemption would be in the public interest;
- (b) a determination, after a technical evaluation of whether the applicant's proposal would provide a level of safety equivalent to that established by the regulation, although where the Authority decides that a technical evaluation of the request would impose a significant burden on the Authority's technical resources, the Authority may deny the exemption on that basis;
- (c) a determination of whether a grant of the exemption would contravene these Regulations; and
- (d) a recommendation based on the preceding elements, of whether the request should be granted or denied, and of any conditions or limitations that should be part of the exemption.

(2) The Authority shall notify the applicant in writing of, the decision to grant or deny the request and publish a detailed summary of its evaluation and decision.

(3) The summary referred to in sub-regulation (2) shall specify the duration of the exemption and any conditions or limitations of the exemption.

(4) If the exemption affects a significant population of the aviation community of the United Republic of Tanzania the Authority shall publish the

summary in aeronautical information circular.

PART XI
GENERAL PROVISIONS

Drug and
alcohol testing
and reporting.

275.-(1) Any person who performs any function prescribed by these Regulations directly or by contract under the provisions of these Regulations may be tested for drug or alcohol usage.

(2) A person who-

(a) refuses to submit to be tested for the percentage of alcohol in the blood; or

(b) refuses to submit to a test to indicate the presence of narcotic drugs, marijuana, or depressant or stimulant drugs or substances in the body, when so requested by a law enforcement officer or the Authority, or refuses to furnish or to authorise the release of the test results requested by the Authority,

shall-

(i) be denied any licence, certificate, rating, qualification, or authorisation issued under these Regulations for a period of up to one year from the date of that refusal; or

(ii) have their licence, certificate, rating, qualification, or authorisation issued under these Regulations suspended or revoked.

(3) Any person who is convicted for the violation of any local or national statute relating to the growing, processing, manufacture, sale, disposition, possession, transportation, or importation of narcotic drugs, marijuana, or depressant or stimulant drugs or substances, shall-

- (a) be denied any license, certificate, rating, qualification, or authorisation issued under these Regulations for a period of up to one year after the date of conviction; or
- (b) have their licence, certificate, rating, qualification, or authorisation issued under these Regulations suspended or revoked.

Change of
Name

276.-(1) A holder of a certificate issued under these Regulations may apply to the Authority for-

- (a) a replacement of the certificate if lost or destroyed;
- (b) a change of name on the certificate; or
- (c) an endorsement on the certificate.

(2) For the purposes of sub regulation (1), the holder of a certificate shall submit to the Authority-

- (a) the original certificate or a copy thereof in case of loss; and
- (b) a court order, or other legal document verifying the name change.

(3) The Authority shall return to the holder of a certificate, with the appropriate changes applied for, if any, the documents in sub regulation (2) and, where necessary, retain copies thereof.

Change of
address

277.-(1) A holder of a certificate issued under these Regulations shall notify the Authority of the change in the physical and mailing address within fourteen days of such change.

(2) A person who does not notify the Authority of the change in the physical and mailing address within the time frame specified in sub-regulation (1) shall not exercise the privileges of the certificate.

Replacement of
documents

278. A person may apply to the Authority, in the prescribed form for a replacement of the documents issued under these Regulations where the documents are lost or destroyed.

Use and
retention of
documents and
records

279.-(1) A person shall not-

- (a) use any certificate or exemption issued or required by or under these Regulations which has been forged, altered, cancelled, or suspended, or to which he is not entitled;
- (b) forge or alter any certificate or exemption issued or required by or under these Regulations;
- (c) lend any certificate or exemption issued or required by or under these Regulations to any other person;
- (d) make any false representation for the purpose of procuring for himself or any other person the grant, issue, renewal or variation of any such certificate or exemption; or
- (e) mutilate, alter, render illegible or destroy any records, or any entry made therein, required by or under these Regulations to be maintained, or knowingly make, or procure or assist in the making of, any false entry in any such record, or wilfully omit to make a material entry in such record.

(2) All records required to be maintained by or under these Regulations shall be recorded in a permanent and indelible material.

(3) A person shall not issue any certificate:

- (a) or exemption under these Regulations unless he is authorised to do so by the Authority; or
- (b) referred to in sub-regulation (3) unless he has satisfied himself that all statements in the certificate are correct, and that the applicant is qualified to hold that certificate.

Reports of
violation
Cap.80

280.-(1) Any person who knows of a violation of the Act, or any Regulations, rules, or orders issued there under, shall report it to the Authority.

(2) The Authority may determine the nature and type of investigation or enforcement action that need to be taken.

Failure to
comply with
direction

281. Any person who fails to comply with any direction given to him by the Authority or by any authorised person under any provision of these Regulations commits an offence.

Aeronautical
fees

282.-(1) The Authority shall notify, in writing, the fees to be charged in connection with the issue, renewal or variation of any certificate, test, inspection or investigation required by, or for the purpose of these Regulations any orders, notices or proclamations made there under.

(2) An applicant for anything under these Regulations shall, before the application is accepted, be required to pay the fee so chargeable for the respective application.

(3) Where a payment has been made in terms of sub regulation (2) and the applicant decides to withdraw the application the Authority shall not refund the payment made.

PART XII OFFENCES AND PENALTIES

Penalties

283.-(1) A person who contravenes any provision of these Regulations, orders, notices or proclamations made there under shall, upon conviction, be liable to a fine not exceeding one million shillings or to imprisonment for a term not more than six months or both, and in the case of a continuing contravention, each day of the contravention shall constitute a separate offence.

(2) If it is proved that an act or omission of any person, which would otherwise have been a contravention by that person of a provision of these

Regulations, orders, notices or proclamations made there under was due to any cause not avoidable by the exercise of reasonable care by that person, the act or omission shall be deemed not to be a contravention by that person of that provision.

(3) Where any person is aggrieved by any order made under these Regulations the person may, within twenty one days of such order being made, appeal against the order to a court of law with competent jurisdiction.

General penalty

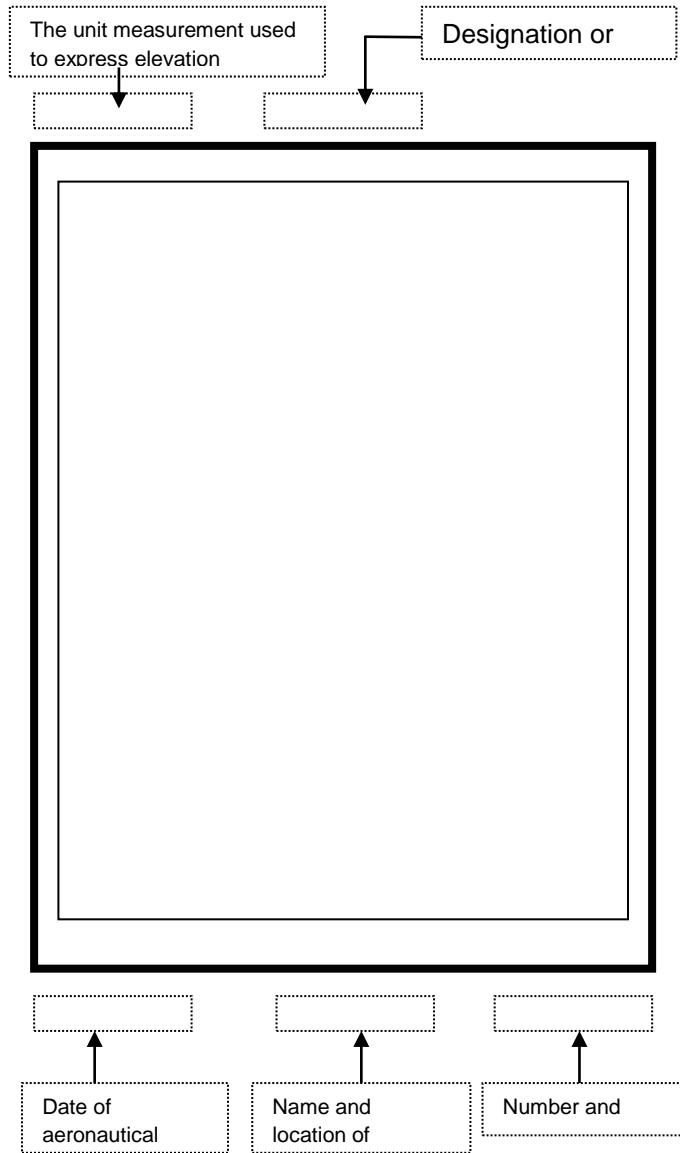
284. A person who contravenes any provision of these Regulations for which no penalty has been provided, commits an offence and-

- (a) shall, on conviction be liable to a fine of the sum equivalent in Tanzanian shillings of five hundred United States dollars; and
- (b) may, on conviction have his certificate, approval, authorisation, exemption or such other document revoked or suspended.

FIRST SCHEDULE

MARGINAL LAYOUT

(Made under regulation 7)



SECOND SCHEDULE

ICAO CHART SYMBOLS

(Made under regulation 8, 18, 50)

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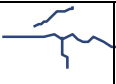











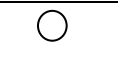


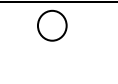
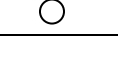
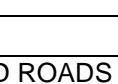

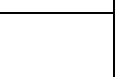
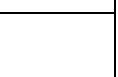
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TOPOGRAPHY





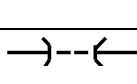
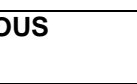
1	Contours		8	Gravel		12	Highest elevation on chart	Alternative	
2	Approximate Contours		9	Levee or esker					
3	Relief shown by hachers					13	Spot elevation		
4	Bluff, cliff or escarpment		10	Unusual land features approximately labelled		14	Spot elevation (of doubtful accuracy)		
5	Lava Flow					15	Coniferous trees		
6	Sand dunes			Active volcano		16	Other trees		
7	Sand areas		11	Mountain pass		17	Palms		
18		Areas not surveyed for contours information or relief data incomplete						Caution	

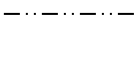
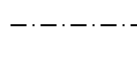
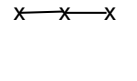
HYDROGRAPHY

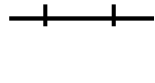
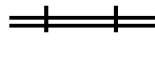
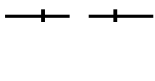
19	Shore line (reliable)		30	Abandoned canal		38	Reservoir	Reservoir	
20	Shore line (reliable)			Note- Dry canal having landmark value		39	Dry lake bed	Alternative	
21	Tidal flats		31	Lakes (perennial)					
22	Coral reefs and ledges		32	Lakes (non-perennial)		40	Wash	Alternative	
23	Large river (perennial)								

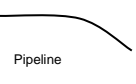



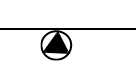

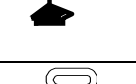



24	Small river (perennial)		33	Salt lake		41	Shoals	
25	Rivers and streams (non-perennial)	 Alternative 	34	Salt pans (evaporator)		42	Glacier and ice caps	
26	Rivers and stream (unsurveyed)		35	Swap		43	Danger line (2m or one fathom line)	
27	Rapids		36	Rice field	 Alternative 	44	Charted isolated rock	
28	Falls		37	Spring, well or water hole	 Perennial  Intermittent 	45	Rock awash	
29	Canal					46	Unusual water features approx labelled	

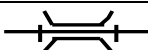
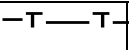

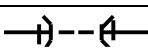
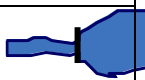






BUILT-UP AREAS		
47	City or large town	
48	Town	
49	Village	
50	Buildings	

HIGHWAY AND ROADS		
57	Dual highway	
58	Primary road	
59	Secondary road	
60	Trial	
61	Road bridge	
62	Road tunnel	












MISCELLANEOUS		
63	Boundaries international	
64	Outer boundaries	
65	Fence	

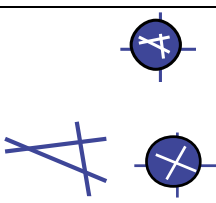
RAIL ROADS		
51	Rail road (single track)	
52	Rail road (two or more tracks)	
53	Rail road (under construction)	

MISCELLANEOUS		
69	Pipeline	
70	Oil or gas	
71	Tank farms	
72	Nuclear power station	
73	Coast guard station	
74	Lookout tower	
75	Mine	
76	Forest ranger station	
77	Race track and stadium	
78	Ruins	

54	Railroad bridge			66	Telegraph or telephone line (when a landmark)		79	Fort	
55	Railroad tunnel			67	Dam		80	Church	
56	Rail Station			68	Ferry		81	Mosque	
							82	Pagoda	
							83	Temple	

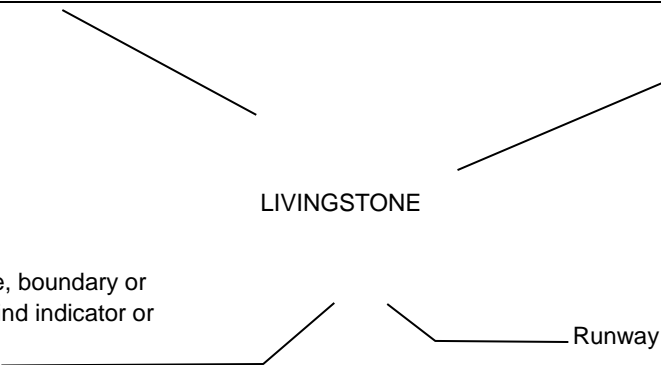
AERODROME

84	Civil Land			88	Joint civil and military land		92	Sheltered anchorage	
85	Civil water			89	Joint civil and military water		93	Aerodrome for use on charts on which aerodrome classification is not required e.g. enroute charts	
86	Military Land			90	Emergency aerodrome or aerodrome with no facilities		94	Heliport Note: Aerodrome for the exclusive use of heliports	
87	Military water			91	Abandoned or closed aerodrome				



95	Note:- Where required by the function of the chart, the runway pattern of the aerodrome may be shown in lieu of the aerodrome symbols , for example:	
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AERODROME DATA IN ABBREVIATED FORM WHICH MAY BE IN ASSOCIATION WITH AERODROME SYMBOLS




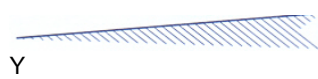





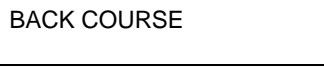

96	Elevation given in the units of measurement (meters or feet) selected for use on the chart	Name of aerodrome	Length of longest runway in hundreds of meters or feet (which ever unit is selected for use on the chart)
----	--	-------------------	---

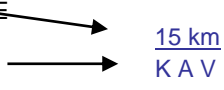
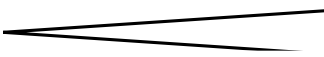




	 <p>LIVINGSTONE</p> <p>Minimum lighting – obstacle, boundary or runway lights and lighted wind indicator or landing direction indicator</p> <p>Runway hard surfaced normally all weather</p> <p>Note: a dash (-) is inserted where L or H do not apply</p>
--	--

AERODROME SYMBOLS FOR APPROACH CHARTS

97	Aerodrome affecting the traffic pattern on the aerodrome on which may be used with the procedure is based.		98	The aerodrome on which the procedure is based	
----	--	--	----	---	---











RADIO NAVIGATIONAL AIDS

99	Basic radio navigation aids symbol Note:- This symbol may be used with or without a box to enclose the data.		1007	Calculated VOR and TACAN radio navigation aids - VORTAC	
100	Non-direction radio beacon NDB				PLAN VIEW B 
101	VHF – omni directional radio range VOR				Electronic 
102	Distance measuring equipment DME				FRONT COURSE 
103	Collocated VOR and DME VOR/DME Radio navigational aids		1008	Instrument landing system - ILS	BACK COURSE  PROFILE 

104	DME distance	Distance in kilometres (nautical miles) to DME Identification of Radio navigation aid				Electronic	
105	VOR radial	Radial bearing from, identification of ,VOR		1 0 9	Radio marker beacon	Elliptical Bone shape	 
106	UHF tactical air navigation aid	TACAN			Note: - Marker beacon may be shown by outline, or shape or both		

110	<p>Compass rose</p> <p>To be oriented on the chart in</p> <p>Accordance with the alignment of the station (normally magnetic North).</p> <p>Note: - <i>additional points of compass may be added as required.</i></p>		<p>Compass rose to be used as appropriate in combination with the following symbols:</p>	<table><tr><td>VOR</td><td></td></tr><tr><td>VOR/DME</td><td></td></tr><tr><td>TACAN</td><td></td></tr><tr><td>VORTAC</td><td></td></tr></table>	VOR		VOR/DME		TACAN		VORTAC	
VOR												
VOR/DME												
TACAN												
VORTAC												

AIR TRAFFIC SERVICES

111	Flight information region			119	Visual flight path	Compulsory with Radio communication requirement	
112	Aerodrome traffic zone					Compulsory without radio communication requirement	
113	Control area	Alternative		120	Scale break	Alternative	
	airway						
	CTA						
	controlled route						
	AWY						

Significant Point Functionality										
				Significant Point Depiction for Conventional Navigation		Significant Point Depiction for Area Navigation				
REPORTING FLY-BY/FLY-OVER				On request (N/A)	Compulsory (N/A)	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 detail on use and meaning of these symbols, refer to paragraph 2.4										

114	Uncontrolled route				122	Change - over point COP		26	
					To be superimposed on the appropriate route symbol at right angles to the route		36		
115	Advisory airspace				123	ATS/MET reporting point		Compulsory	
ADA			On request						
116	Control Zone								
CTR									
117	Air defence identification zone				124	Way -point WPT	Flyover WPT (also used to start point and end point of a controlled turn)		
ADIZ									
118	Advisory route	ADR	Alternative					Fly-by WPT	

AIRSPACE CLASSIFICATIONS

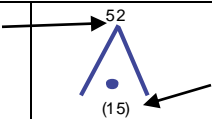
125	Airspace classification		Aeronautical data in abbreviated form to be used in association with airspace classification symbols:		
			126	Alternative	<p>TMA DONLON 119.1 C 200m AGL - FL 245</p> <p>Type Name or Call sign Radio frequency (ies) Airspace classification Vertical limits</p> <p>TMA DONLON C FL 245 200 m AGL 119.1</p>

AIRSPACE RESTRICTION

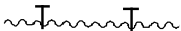


127	Restricted airspace (prohibited, restricted or danger area)		Common boundary of two areas	
128	International boundary closed top passage of aircraft air corridor			

OBSTACLE





129	Obstacle		133	Exceptionally high obstacle (optional symbol)	
130	Lighted obstacle		134	Exceptionally high obstacle – lighted (optional symbol)	
131	Group obstacles		<p>Elevation of top (italics)</p> <p>Height above specified datum (upright type in parentheses)</p>		
132	Lighted group				

	obstacle		
--	----------	--	---

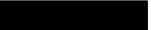

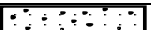



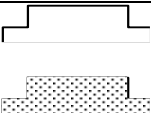


MISCELLANEOUS









136	Prominent transmission line		137	Isogonic line or isogonal		138	Ocean station vessel (normal position)	
-----	-----------------------------	---	-----	---------------------------	--	-----	--	---

VISUAL AIDS








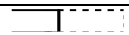


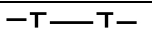
139	Marine light		Note 1 : Marine alternating lights are red and white unless otherwise indicated marine lights are while unless colours are stated.									
			Note2 : - Characteristics are to be indicated as follows :		Alt	Alternating	Fl	Flashing	Occ	Occulting	Sec	Second
					B	Blue	G	Green	R	Red	(U)	Unwatched
					F	Fixed	Gp	Group	Sec	Sector	w	white
140	Aeronautical ground light		Electronic		141	Lightship						

SYMBOLS FOR AERODROME / HELIPORTS CHARTS

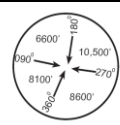
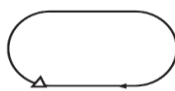
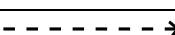
142	Hard surface runway		150	Pierced steel plank or steel mesh runway	
143	Unpaved runway		151	Point light	
144	Stopway SWY				
145	Taxiway and parking areas		152	Obstacle light	
146	Helicopter alighting area in an			Landing direction indicator (lighted)	

	aerodrome		153		
147	Aerodrome reference point		154	Landing direction indicator (unlighted)	
148	VOR check-point		155	Stop bar	
149	Runway visual range (RVR) observation site		156	Runway – holding position	<div>Pattern A </div> <div>Pattern B </div>







SYMBOLS FOR AERODROME OBSTACLE CHART TYPE A, B, AND C

		Plan	Profile			Plan	Profile
157	Tree or shrub		Identification Number 	162	Terrain penetrating obstacle plane		
158	Pole, tower, spire, antenna, etc			163	Escarpment		
159	Building or large structure			164	Stopway SWY		
160	Railroad			165	Clearway CWY		
161	Transmission line or overhead cable						

ADDITIONAL SYMBOLS FOR USE ON ELECTRONIC CHARTS

	PLAN VIEW	ELECTRONIC
166	Minimum sector altitude Note:- This symbol may be modified to reflect particular sector shape <div>MSA</div>	
167	Holding pattern	
168	Missed approach track	

PROFILE

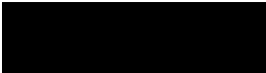











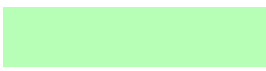

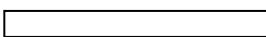
169	Runway	
170	Radio navigational aid (type of aid and its use in the	
171	Radio marker beacon (type of aid to be annotated on top)	
172	Collocated radio navigation aid and marker beacon (type of aid to be annotated on top of the symbol)	
173	DME fix (distance from DME and fix use in the procedure to be annotated on top of the symbol)	
174	Collocated DME fix and marker beacon (distance from DME and the type of beacon to be annotated on top of the symbol)	

THIRD SCHEDULE













COLOUR GUIDE

(Made under regulation 15)

CHART SYMBOLS

Description		Colour	
Culture, except highways and roads; outlines of large cities, grids and graticules: spot elevation; danger area lines and off shore rocks; names and lettering except for aeronautical and hydrographic feature		Black	
Built –up areas of cities		Black simple	
Highway and roads	Optional colour	Black Half-tone	
		Red	
Built –up areas for cities (alternative to black stipple)		Yellow	
Contours and topographic features: item 1 through 10 of appendix 2 Hydrographic feature: items 39 through 41 of appendix		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 rives and non-perennial lakes		Blue Stipple	
Aeronautical data, except for En-route and are charts – ICAO. Where different colour may be required. Both colours may be used on the same sheet but, where only one colour is use, dark blue is required	Optional colour	Mngenta	
		Dark blue	
Woods		Green	
Areas which have not been surveyed for contour information or relief data are incomplete	Optional Colours	Golden Buff	
		White	

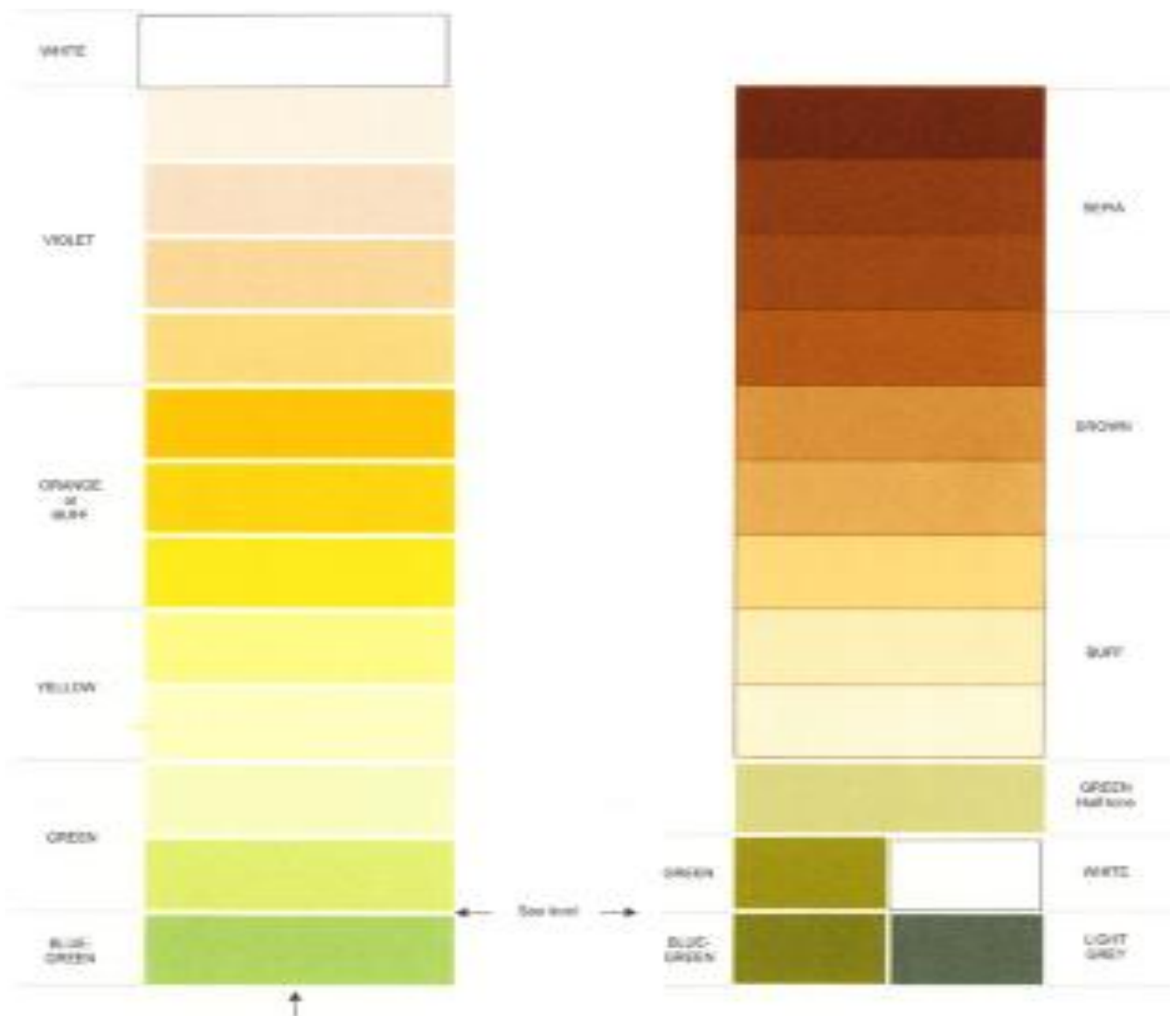
HYPSONOMETRIC TINT

HYPSONOMETRIC TINTS					
	WHITE	Tint for extreme elevations		SEPIA	
	VIOLET				
	ORANGE or BUFF	Tint for higher range elevations		BROWN	
	YELLOW			BUFF	
	GREEN	Tint for lower range elevations	Optional colours	GREEN	
	BLUE-GREEN			WHITE	
		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
HYPSONETRIC TINT GUIDE

(Made under regulation 16)

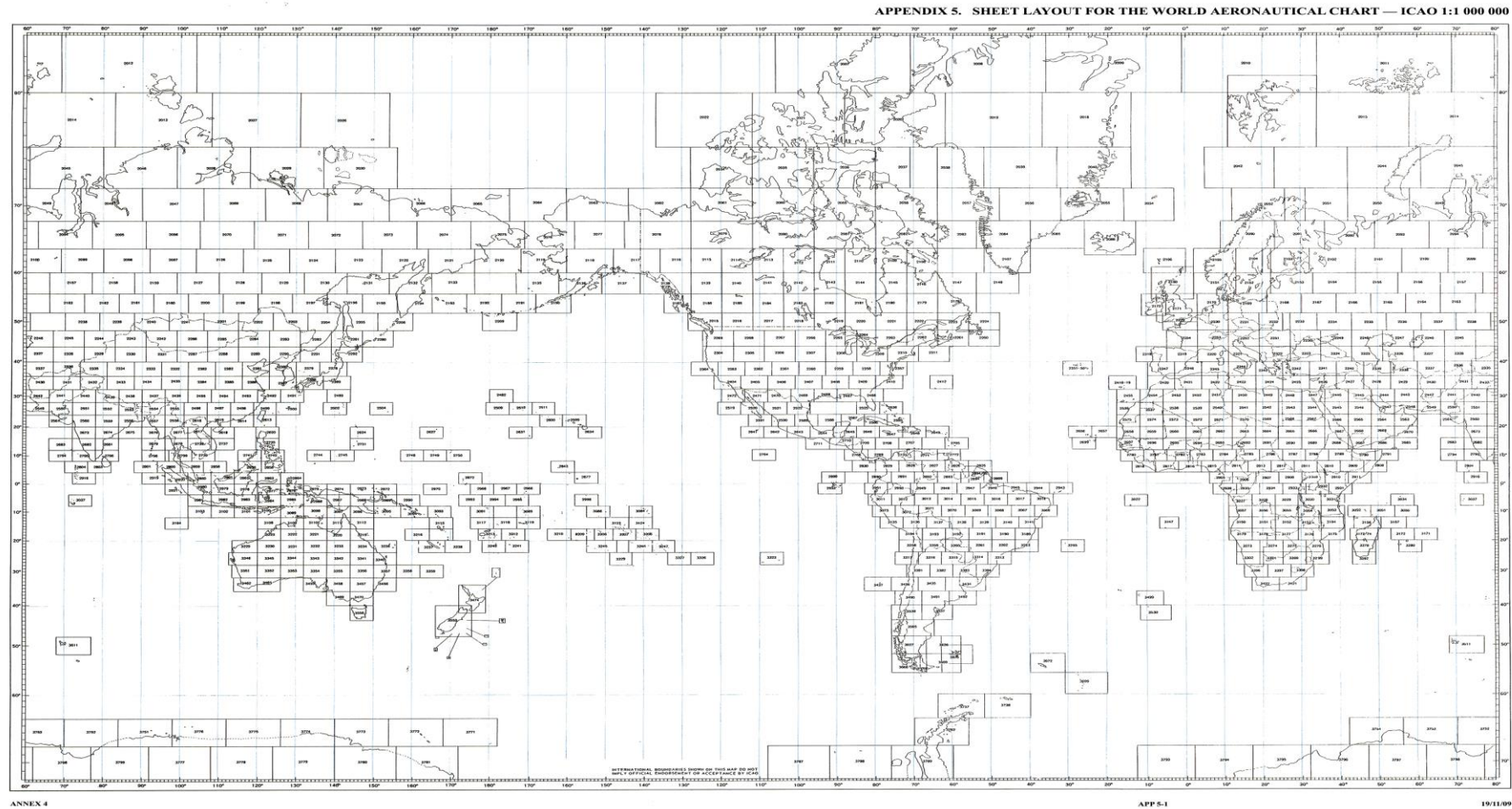


Note 1.— These tints are identical to those specified for the International Map of the World.

Note 2.— Deviations have not been associated with tint of either system in order to allow for flexibility in their selection.

SCHEDULE 5: SHEET LAYOUT INDEX FOR THE WORLD

SHEET LAYOUT INDEX FOR THE WORLD AERONAUTICAL CHART – ICAO 1:1000 000



SIXTH SCHEDULE

AERONAUTICAL DATA QUALITY REQUIREMENTS

(Made under regulation 20)

Table 1. Latitude and longitude

Latitude and longitude	Chart resolution	Integrity Classification
Flight information region boundary points	as plotted	routine
P, R, D area boundary points (outside CTA/CTR boundaries)	as plotted	routine
P, R, D area boundary points (inside CTA/CTR boundaries)	as plotted	essential
CTA/ CTR boundary points.....	as plotted	essential
En-route navaids, intersections and waypoints, and holding, and STAR/SID points.....	1 sec	essential
Obstacles in Area 1 (the entire State territory).....	as plotted	routine
Aerodrome/heliport reference point.....	1 sec	routine
Navaids located at the aerodrome/heliport.....	as plotted	essential
Obstacles in Area 3.....	1/10 sec	essential
Obstacles in Area 2.....	1/10 sec	essential
Final approach fixes/points and other essential fixes/points comprising the instrument approach procedure	1 sec	essential
Runway thresholds	1 sec	critical
Taxiway centre line/parking guidance line points.....	1/100 sec	essential
Runway end.....	1 sec	critical
Runway holding position	1 sec	critical
Taxiway intersection marking line.....	1 sec	essential
Exit guidance line	1 sec	essential
Apron boundaries (polygon).....	1 sec	routine
De-/anti-icing facility (polygon).....	1 sec	routine
Aircraft standpoints/INS checkpoints	1/100 sec	routine
Geometric centre of TLOF or FATO thresholds, heliports.....	1 sec	critical

**Table 2.
Elevation/altitude/height**

Elevation/altitude/height	Chart resolution	Integrity Classification
Aerodrome/heliport elevation	1 m or 1 ft	essential
WGS-84 geoid undulation at aerodrome/heliport elevation position.....	1 m or 1 ft	essential
Runway or FATO threshold, non-precision approaches	1 m or 1 ft	essential
WGS-84 geoid undulation at runway or FATO threshold, TLOF geometric centre, non-precision approaches	1 m or 1 ft	essential
Runway or FATO threshold, precision approaches	0.5 m or 1 ft	critical
WGS-84 geoid undulation at runway or FATO threshold, TLOF geometric centre, precision approaches.....	0.5 m or 1 ft	critical
Threshold crossing height (Reference datum height), precision approaches	0.5 m or 1 ft	critical
Obstacle clearance altitude/height (OCA/H)	as specified in PANS-OPS (Doc 8168)	essential
Obstacles in Area 1 (the entire State territory).....	3 m (10 ft)	routine
Obstacles in Area 2.....	1 m or 1 ft	essential
Obstacles in Area 3.....	1 m or 1 ft	essential
Distance measuring equipment (DME).....	30 m (100 ft)	essential
Instrument approach procedures altitude	as specified in PANS-OPS (Doc 8168)	essential
Minimum altitudes.....	50 m or 100 ft	routine
Heliport crossing height, PinS approaches.....	1 m or 1 ft	essential

Table 3. Gradients and angles

Type of gradient/angle	Chart resolution	Integrity Classification
Non-precision final approach descent gradient.....	0.1 per cent	critical
Final approach descent angle (Non-precision approach or approach with vertical guidance).....	0.1 degree	critical
Precision approach glide path/elevation angle.....	0.1 degree	critical

Table 4. Magnetic variation

Magnetic variation	Chart resolution	Integrity Classification
Aerodrome/heliport magnetic variation	1 degree	essential

**Table 5.
Bearing**

Bearing	Chart resolution	Integrity Classification
Airway segments	1 degree	routine
Bearing used for the formation of an en-route and of a terminal fix.....	1/10 degree	routine
Terminal arrival/departure route segments	1 degree	routine
Bearing used for the formation of an instrument approach procedure fix.....	1/10 degree	essential
ILS localizer alignment.....	1 degree	essential
MLS zero azimuth alignment	1 degree	essential
Runway and FATO bearing	1 degree	routine

Table 6.
Length/distance/dimension

Length/distance/dimension	Chart resolution	Integrity Classification
Airway segment length	1 km or 1 NM	routine
Distance used for the formation of an en-route fix	2/10 km (1/10 NM)	routine
Terminal arrival/departure route segment length	1 km or 1 NM	essential
Distance used for the formation of a terminal and instrument approach procedure fix.....	2/10 km (1/10 NM)	essential
Runway and FATO length, TLOF dimensions	1 m	critical
Runway width.....	1 m	essential
Stopway length and width	1 m	critical
Landing distance available.....	1 m	critical
Take-off run available.....	1 m	critical
Take-off distance available.....	1 m	critical
Accelerate-stop distance available.....	1 m	critical
ILS localizer antenna-runway end, distance	as plotted	routine
ILS glide slope antenna-threshold, distance along centre line	as plotted	routine
ILS marker-threshold distance	2/10 km (1/10 NM)	essential
ILS DME antenna-threshold, distance along centre line.....	as plotted	essential
MLS azimuth antenna-runway end, distance	as plotted	routine
MLS elevation antenna-threshold, distance along centre line.....	as plotted	routine
MLS DME/P antenna-threshold, distance along centre line	as plotted	essential

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