STATE OF LIBYA
MINISTRY OF TRANSPORT
CIVIL AVIATION AUTHORITY

دولة ليبيا
وزارة المواصلات
مصلحة الطيران المدني

LYCAR Part-Charts

Libyan Civil Aviation Regulation

Part - Charts: Aeronautical Charts

Second issue, February 2023

Approved by and published under the authority of the President of LYCAA.

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RECORD OF REVISIONS

No.	Date	Description / Highlights
Issue 1	August 2017	Initial issue
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FOREWORD

1. The regulation contained herein is adopted under the provision of Article N5 of Libyan Civil Aviation Law N6 of 2005, issued and signed by the President of Libyan Civil Aviation by virtue of powers vested from the Minister of Transport under the resolution N154 issued on 13.05.2015.

2. This Libyan Civil Aviation Regulation - Part Aeronautical Charts (LYCAR - Part Charts) prescribes the requirement for the certification and operation of organizations providing the aeronautical chart services for Libya on behalf of the Authority and applicable actions that can be enforced by the Authority against recognized actions of non-compliance.

3. This LYCAR- Part Charts is developed benchmarking upon similar regulations implemented by other member States and includes the subject matter endorsed within the ICAO Annex 4, Aeronautical Charts, and ICAO Doc 8697, Aeronautical Charts Manual.

4. The information contained herein is subject to constant review in the light of changing regulations and requirements. No subscriber or other reader shall act on the basis of any such information without taking appropriate professional advice when/as indicated/required. Although, every effort has been made to ensure accuracy, the Libyan Civil Aviation Authority (LYCAA) shall not be held responsible for loss or damage caused by errors, omissions, misprints or misinterpretation of the content hereof.

5. The use of the male gender implies the female gender and vice versa.

6. Copies of this regulation can be obtained from the ANS Inspectorate Office of the LYCAA or can be downloaded on the official website: www.caa.gov.ly

7. Transition Period: The Libyan Air Navigation Service Providers are required to comply with the requirements of this regulation within three months after its official publication.

Dr. Mohamed Shlibek
President of LYCAA
14th of February 2023

Table of Content

Abbreviations

ADIZ	Air Defense Identification Zone
AIM	Aeronautical Information Management
AIP	Aeronautical Information Publication
AIS	Aeronautical Information Services
AMC	Acceptable Means of Compliance
AOC	Aerodrome Obstacle Chart
AOM	Aerodrome Operating Minima
ATC	Air Traffic Control
ATS	Air Traffic Service
CAT	Category
COM	Communications/Equipment
DME	Distance Measuring Equipment
FAF	Final Approach Fix
FAP	Final Approach Point
ft	Feet
GM	Guidance Material
IAC	Instrument Approach Chart
ICAO	International Civil Aviation Organization
ISA	International Standard Atmosphere
IAF	Initial Approach Fix
IF	Intermediate Approach Fix
ILS	Instrument Landing System
in	Inches
Km	Kilometer
m	Meter
MAP	Maps and Aeronautical Charts
MAPt	Missed Approach Point
mm	Millimeter
Nm	Nautical Mile
NOTAM	Notice to Airmen
OCA/H	Obstacle Clearance Altitude/Height
OIS	Obstacle Identification Surface
PANS-OPS	Procedures for air navigation services – Operations
RNAV	Area Navigation
SID	Standard instrument departure
STAR	Standard instrument arrival
STD	Standard
UTC	Universal Time Coordinated
VAC	Visual approach chart
VOR	VHF omnidirectional radio range
WAC	World aeronautical chart - ICAO 1:1 000 000
WGS-84	World Geodetic System — 1984

Definitions

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

Aerodrome elevation. The elevation of the highest point of the landing area.

Aerodrome operating minima. 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. The designated geographical location of an aerodrome.

Aeronautical chart. A representation of a portion of the Earth, its culture and relief, specifically designated to meet the requirements of air navigation.

Aircraft stand. A designated area on an apron intended to be used for parking an aircraft.

Air defense identification zone. Special designated airspace of defined dimensions within which aircraft are required to comply with special identification and/or reporting procedures additional to those related to the provision of air traffic services (ATS).

Air traffic service. 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. A defined route for the air transiting of helicopters.

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

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

Application. Manipulation and processing of data in support of user requirements (ISO 19104).

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

Area minimum altitude (AMA). The minimum altitude to be used under instrument meteorological conditions (IMC), that provides a minimum obstacle clearance within a specified area, normally formed by parallels and meridians.

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

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

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

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

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

ATS surveillance system. A generic term meaning variously, ADS-B, PSR, SSR or any comparable ground-based system that enables the identification of aircraft.

Note: A comparable ground-based system is one that has been demonstrated, by comparative assessment or other methodology, to have a level of safety and performance equal to or better than mono-pulse SSR.

Bare Earth. Surface of the Earth including bodies of water and permanent ice and snow, and excluding vegetation and man-made objects.

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

Canopy. Bare Earth supplemented by vegetation height.

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

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

Clearway. 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 airplane may make a portion of its initial climb to a specified height.

Contour line. A line on a map or chart connecting points of equal elevation.

Culture. All man-made features constructed on the surface of the Earth, such as cities, railways and canals.

Cyclic redundancy check (CRC). A mathematical algorithm applied to the digital expression of data that provides a level of assurance against loss or alteration of data.

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

Data product specification. 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).

Note: A data product specification provides a description of the universe of discourse and a specification for mapping the universe of discourse to a data set. It may be used for production, sales, end-use or other purpose.

Data quality. A degree or level of confidence that the data provided meet the requirements of the data user in terms of accuracy, resolution and integrity (or equivalent assurance level), traceability, timeliness, completeness and format.

Data resolution. A number of units or digits to which a measured or calculated value is expressed and used.

Data set. Identifiable collection of data (ISO 19101).

Data set series. Collection of data sets sharing the same product specification (ISO 19115*).

Datum. 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). The representation of terrain surface by continuous elevation values at all intersections of a defined grid, referenced to common datum.

Note: Digital Terrain Model (DTM) is sometimes referred to as DEM.

Displaced threshold. A threshold not located at the extremity of a runway.

Electronic aeronautical chart display. 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. 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). The height related to the reference ellipsoid, measured along the ellipsoidal outer normal through the point in question.

Feature. Abstraction of real-world phenomena (ISO 19101).

Feature attribute. Characteristic of a feature (ISO 19101).

Note: A feature attribute has a name, a data type and a value domain associated with it.

Final approach. That part of an instrument approach procedure which commences at the specified final approach fix or point, or where such a fix or point is not specified,

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

b) at the point of interception of the last track specified in the approach procedure; and ends at a point in the vicinity of an aerodrome from which:

1) a landing can be made; or

2) a missed approach procedure is initiated.

Final approach and take-off area (FATO). A defined area over which the final phase of the approach maneuvers to hover or landing is completed and from which the take-off maneuvers 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. That fix or point of an instrument approach procedure where the final approach segment commences.

Final approach segment. That segment of an instrument approach procedure in which alignment and descent for landing are accomplished.

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

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

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

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

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

c) when set to a pressure of 1 013.2 hPa, may be used to indicate flight levels.

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

Geodesic distance. The shortest distance between any two points on a mathematically defined ellipsoidal surface.

Geodetic datum. A minimum set of parameters required to define location and orientation of the local reference system with respect to the global reference system/frame.

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

Note: The geoid is irregular in shape because of local gravitational disturbances (wind tides, salinity, current, etc.) and the direction of gravity is perpendicular to the geoid at every point.

Geoid undulation. The distance of the geoid above (positive) or below (negative) the mathematical reference ellipsoid.

Note: In respect to the World Geodetic System — 1984 (WGS-84) defined ellipsoid, the difference between the WGS-84 ellipsoidal height and orthometric height represents WGS-84 geoid undulation.

Glide path. A descent profile determined for vertical guidance during a final approach.

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

Note: In the Gregorian calendar, common years have 365 days and leap years 366 days divided into twelve sequential months.

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

Helicopter stand. 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. An aerodrome or a defined area on a structure intended to be used wholly or in part for the arrival, departure and surface movement of helicopters.

Heliport reference point (HRP). The designated location of a heliport or a landing location.

Holding procedure. A predetermined maneuver which keeps an aircraft within a specified airspace while awaiting further clearance.

Hot spot. 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. 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. A succession of shades or color gradations used to depict ranges of elevation.

Initial approach segment. That segment of an instrument approach procedure between the initial approach fix and the intermediate approach fix or, where applicable, the final approach fix or point.

Instrument approach procedure. A series of predetermined maneuvers 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). 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 low probability when using corrupted essential data that the continued safe flight and landing of an aircraft would be severely at risk with the potential for catastrophe; and

c) critical data: there is a high probability when using corrupted critical data that the continued safe flight and landing of an aircraft would be severely at risk with the potential for catastrophe.

Intermediate approach segment. 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. 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. A line on a map or chart on which all points have the same magnetic variation for a specified epoch.

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

Landing direction indicator. A device to indicate visually the direction currently designated for landing and for take-off.

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

Logon address. A specified code used for data link logon to an ATS unit.

Magnetic variation. The angular difference between True North and Magnetic North.

Note: The value given indicates whether the angular difference is East or West of True North.

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

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

Metadata. Data about data (ISO 19115).

Note: Data that describes and documents data.

Minimum en-route altitude (MEA). 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). The minimum altitude for a defined segment of flight that provides the required obstacle clearance.

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

Missed approach point (MAPt). 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. The procedure to be followed if the approach cannot be continued.

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

Navigation specification. 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:

- 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.

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

Note 1: The Performance-based Navigation (PBN) Manual (Doc 9613), Volume II, contains detailed guidance on navigation specifications.

Note 2: The term RNP, previously defined as "a statement of the navigation performance necessary for operation within a defined airspace", has been removed from this Annex as the concept of RNP has been overtaken by the concept of PBN. The term RNP in this Annex is now solely used in the context of navigation specifications that require performance monitoring and alerting, e.g. RNP 4 refers to the aircraft and operating requirements, including a 4 NM lateral performance with on-board performance monitoring and alerting that are detailed in Doc 9613.

Obstacle. 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.

Note: The term obstacle is used in this Annex solely for the purpose of specifying the charting of objects that are considered a potential hazard to the safe passage of aircraft in the type of operation for which the individual chart series is designed.

Obstacle clearance altitude (OCA) or obstacle clearance height (OCH). 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.

Note 1: Obstacle clearance altitude is referenced to mean sea level and obstacle clearance height is referenced to the threshold elevation or in the case of non-precision approaches to the aerodrome elevation or the threshold elevation if that is more than 2 m (7 ft) below the aerodrome elevation. An obstacle clearance height for a circling approach is referenced to the aerodrome elevation.

Note 2: For convenience when both expressions are used they may be written in the form "obstacle clearance altitude/height" and abbreviated "OCA/H".

Note 3: See Procedures for Air Navigation Services — Aircraft Operations (Doc 8168), Volume I, Part I, Section 4, Chapter 1, 1.5, and Volume II, Part I, Section 4, Chapter 5, 5.4, for specific applications of this definition.

Obstacle free zone (OFZ). 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. Height of a point related to the geoid, generally presented as an MSL elevation.

Performance-based navigation (PBN). Area navigation based on performance requirements for aircraft operating along an ATS route, on an instrument approach procedure or in a designated airspace.

Note: Performance requirements are expressed in navigation specifications (RNAV specification, RNP specification) in terms of accuracy, integrity, continuity, availability and functionality needed for the proposed operation in the context of a particular airspace concept.

Point light. A luminous signal appearing without perceptible length.

Portrayal. Presentation of information to humans (ISO 19117).

Position (geographical). 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. An instrument approach procedure utilizing azimuth and glide path information provided by ILS or PAR.

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

Procedure turn. A maneuver 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.

Note 1: Procedure turns are designated "left" or "right" according to the direction of the initial turn.

Note 2: Procedure turns may be designated as being made either in level flight or while descending, according to the circumstances of each individual procedure.

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

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

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

Note: There are three categories of reporting points: ground-based navigation aid, intersection and waypoint. In the context of this definition, intersection is a significant point expressed as radials, bearings and/or distances from ground-based navigation aids. A reporting point can be indicated as "on request" or as "compulsory".

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

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

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

Note: In radiotelephony phraseologies, the expression "holding point" is used to designate the runway-holding position.

Runway strip. 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). The range over which the pilot of an aircraft on the center line of a runway can see the runway surface markings or the lights delineating the runway or identifying its center line.

Shoulder. 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. A specified geographical location used in defining an ATS route or the flight path of an aircraft and for other navigation and ATS purposes.

Note: There are three categories of significant points: ground-based navigation aid, intersection and waypoint. In the context of this definition, intersection is a significant point expressed as radials, bearings and/or distances from ground-based navigation aids.

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

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

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

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

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

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

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

Terrain. 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.

Note: In practical terms, depending on the method of data collection, terrain represents the continuous surface that exists at the bare Earth, the top of the canopy or something in-between, also known as "first reflective surface".

Threshold. The beginning of that portion of the runway usable for landing.

Touchdown and lift-off area (TLOF). A load bearing area on which a helicopter may touch down or lift off.

Touchdown zone. The portion of a runway, beyond the threshold, where it is intended landing airplanes first contact the runway.

Track. The projection on the earth's surface of the path of an aircraft, the direction of which path at any point is usually expressed in degrees from North (true, magnetic or grid).

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

Vectoring. Provision of navigational guidance to aircraft in the form of specific headings, based on the use of an ATS surveillance system.

Visual approach procedure. A series of predetermined maneuvers 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. 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.

Subpart A – General

Chart.005 Applicability

(a) This Regulation prescribes:

(1) The rules governing the certification and operation of organizations providing Aeronautical Charts used for air navigation within the State of Libya as designated by the Authority; and

(2) The requirements and technical regulations for the provision of aeronautical charts design and production.

(b) This Part was developed using:

(1) ICAO Annex 4 (Aeronautical charts);

(2) ICAO DOC 8697 (Aeronautical Charts Manual);

(3) ICAO Document 8168 (Aircraft Operations):

i. Volume I - Flight Procedures

ii. Volume II - Construction of Visual and Instrument Flight Procedures)

(4) ICAO ANNEX 11 (Air Traffic Services);

(5) ICAO ANNEX 14 (Aerodromes)

i. Volume I - Aerodrome Design and Operations

ii. Volume II - Heliports

(6) ICAO Annex 15 — Aeronautical Information Services;

(c) All charts coming within the scope of this Part shall conform to the regulations relevant to the particular chart.

(d) All charts produced under the standard of this Regulation shall be sent to the aeronautical information service, after approval by the Authority to be published in the Libyan AIP as per Chart.135.

Chart.010 Entry into force

This Regulation shall enter into force from the day of its publication and shall become applicable after the transition period, except for Chart.025 related to the requirement for certification of Aeronautical Charts service providers, which shall apply from 21st of June 2024. This exception shall not apply against any Commercial chart-producing organization providing aeronautical charts services for Libya.

Chart.015 Definitions

Definitions existing in ICAO Documents shall form part of this regulation, supplemented by the definitions contained in this part. Where there are differences between the definitions in the two sources, this Part has precedence.

Chart.020 Availability

(a) Information. The State of Libya shall on request by another Contracting State provide all information relating to its own territory that is necessary to enable the requirements of this Part to be met;

(b) Charts. The Libyan Civil Aviation Authority (LYCAA) shall, when so specified, ensure the availability of charts in whichever of the following ways is appropriate for a particular chart or single sheet of a chart series.

Note: The availability of charts includes specified electronic charts.

(c) For any chart or single sheet of a chart series entirely contained within the territory of Libya, the LYCAA shall either:

(1) produce the chart or sheet itself; or

(2) arrange for its production by another State or by an agency; or

(3) 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, the States having jurisdiction over the territory so included shall determine the manner in which the chart or sheet will be made available. This determination shall be made with due regard being given to regional air navigation agreements and to any program of allocation established by the Council of ICAO.

(e) LYCAA shall 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.

(f) To improve worldwide dissemination of information on new charting techniques and production methods, appropriate charts produced by the LYCAA or the aeronautical charts service provider shall be made available without charge to other Contracting States on request on a reciprocal basis.

Chart.025 Requirement for certificate

No person shall provide an Aeronautical Charts service for the State of Libya except under the Authority of, and in accordance with the provisions of an Aeronautical Charts services certificate issued under this Regulation.

Chart.030 Application for certificate

Each applicant for the grant of an Aeronautical Charts services certificate shall submit an application to the Authority with:

(1) The exposition required by Chart.115; and

(2) A payment of the appropriate application fee prescribed by regulations.

Chart.035 Issue of certificate

An applicant is entitled to an Aeronautical Charts services certificate if the Authority is satisfied that:

(1) The applicant meets the requirements of Subpart B and applicable paragraphs of this Regulation; and

(2) The applicant, and the applicant's senior person or persons required by Chart.075 (a)(1) and (2) are fit and proper persons; and

(3) The granting of the certificate is not contrary to the interests of aviation safety.

Chart.040 Privileges of certificate

The Aeronautical Charts services certificate specifies the services that the certificate holder is authorized to provide.

Chart.045 Duration of certificate

(a) An Aeronautical Charts services certificate is granted or renewed for a maximum period of three (3) years.

(b) An Aeronautical Charts services certificate remains in force until it expires, or is suspended or revoked.

(c) Upon revocation, suspension or surrender, the Aeronautical Charts services certificate shall be returned to the Authority without delay.

(d) The holder of the Aeronautical Charts services certificate that expires shall surrender the certificate to the Authority.

(e) The holder of a Certificate for the Aeronautical Charts service that is suspended shall immediately return the certificate to the Authority for appropriate endorsement.

(f) The validity of the Certificate is based upon the continued operation in accordance with this Civil Aviation Regulations.

(g) The Certificate shall remain valid subject to periodic surveillance audits conducted at the discretion of the Authority confirming ongoing compliance with the Civil Aviation Regulations.

Chart.050 Renewal of certificate

(a) An application for the renewal of an Aeronautical Charts services certificate shall be made to the Authority.

(b) The application shall be submitted to the Authority before the application renewal date specified on the certificate or, if no such date is specified, not less than thirty (30) days before the certificate expires.

Chart.055 Safety inspections and audits

(a) The Authority shall conduct an initial certification audit and thereafter audits at intervals not exceeding two years (24 months) at the certificate holder's office/facility.

(b) The Authority may require the certificate holders to provide such information as the Authority considers relevant to the inspection or audit.

(c) The Authority shall be granted unrestricted access to the certificate holder's facilities and shall be permitted to carry its own equipment (e.g., computers, cameras and recording devices) under all conditions while carrying out its oversight functions.

Chart.060 Resolution of safety issues

(a) When objective evidence is found showing non-compliance of the holder of a Certificate with the requirements, the finding shall be set out as follows:

(1) A level one finding is any non-compliance with these regulations, which could lead to uncontrolled non-compliances with applicable requirements and could affect the safety of the aircrafts.

(2) A level two finding is any non-compliance with these regulations, which is not classified as level one.

(3) A level three finding is any opportunity of improvement.

(b) After a receipt of notification of findings:

(1) A level one finding must be rectified immediately or within the short timescale specified;

(2) In case of level two findings, the corrective action period granted by the authority shall be appropriate to the nature of the finding but in any case, shall

not be more than ninety (90) days. In certain circumstances the Authority may extend the 90 days' period subject to a satisfactory corrective action plan.

(3) the certificate holders shall:

i. Identify the root cause of the non-compliance;

ii. Define a corrective action plan; and

iii. Demonstrate corrective action implementation to the satisfaction of the Authority within a period agreed with the Authority.

(c) In the case of level one or level two findings, the Certificate may be subject to a partial or full suspension or revocation. The holder of the certificate shall provide confirmation of receipt of the notice of suspension or revocation of the certificate in a timely manner.

Chart.065 Transferability

An aeronautical information service certificate, granted in accordance with the requirements of this CAR, is not transferable.

Chart.070 Non-compliance

(a) Non-compliance with this regulation may require the Authority to restrict, suspend or revoke the Aeronautical Charts services certificate.

(b) Apply any applicable actions that can be enforced by the Authority against recognized actions of non-compliance.

Subpart B - Certification requirements

Chart.075 Personnel requirements

(a) Each applicant for the grant of an Aeronautical Charts services certificate shall engage, employ or contract:

(1) a senior person identified as the Chief Executive, who has the authority within the applicant's organization to ensure that each aeronautical charts service listed in their exposition:

i. can be financed and is provided to meet operational requirements; and

ii. is provided in accordance with the requirements prescribed by this Regulation;

(2) a senior person or group of senior persons who are responsible for ensuring that the applicant's organization complies with the requirements of this Part. Such nominated person or persons shall be ultimately responsible to the Chief Executive;

(3) sufficient personnel to collect, collate, check, edit, produce and distribute aeronautical charts listed in the applicant's exposition.

(b) The applicant shall:

(1) establish procedures acceptable to the Authority and follow the approved training programs for cartographic personnel as follows, as appropriate:

i. Basic training;

ii. Specialized training;

iii. On-job-training;

iv. Recurrent training.

(2) establish a procedure to initially assess the competence of those personnel authorized by the applicant to collect, collate, check, edit, produce and distribute aeronautical charts for the services listed in their exposition; and

(3) establish a procedure to maintain the competence of those authorized personnel;

(4) develop job descriptions for Charts personnel, containing safety responsibilities; and

(5) establish procedures acceptable to the Authority for keeping training record for all technical staff and to be maintained up to date.

Chart.080 Facility Requirements

Each applicant for the grant of an Aeronautical Charts services certificate shall establish offices and facilities that:

(a) Are appropriate for the aeronautical charts services listed in their exposition; and

(b) Meet the applicable requirements of this regulation.

Chart.085 Documentation

(a) Each applicant for the grant of an Aeronautical Charts services certificate shall:

(1) document the format and standards for the aeronautical charts produced and revised under the authority of their certificate; and

(2) ensure that the format and standards take into account the circumstances under which the information will be used; and

(3) hold copies of relevant reference material, standards, practices and procedures and any other documentation that is necessary for the aeronautical charts services listed in their exposition. an Aeronautical Charts Service provider shall, at all times, maintain the following reference materials:

i. ICAO Annex 15 "Aeronautical Information Services" to the Chicago Convention.

ii. ICAO Annex 4 to the Chicago Convention “Aeronautical Charts”;

iii. ICAO Aeronautical Chart Manual (Doc 8697).

iv. ICAO Doc. 8126 (Aeronautical Information Services Manual);

v. Libyan AIP;

vi. Part-Charts “Aeronautical Charts”; and

vii. Part-AIS “Aeronautical Information Services”.

(b) The applicant shall establish a procedure to control all the documentation required by paragraph (a), to ensure that:

(1) the documentation is reviewed and authorized by appropriate personnel before issue; and

(2) current issues of relevant documentation are available to staff at all locations where they need access to such documentation for the aeronautical charts services listed in their exposition; and

(3) all obsolete documentation is promptly removed from all points of issue or use; and

(4) changes to documentation are reviewed and approved by appropriate personnel; and

(5) the current version of each item of documentation can be identified to preclude the use of out-of-date editions.

Chart.090 Collection of Information

(a) Each applicant for the grant of an Aeronautical Charts services certificate shall establish procedures to collect, collate, coordinate and verify aeronautical information for the aeronautical charts services listed in the applicant's exposition;

(b) The procedures shall ensure that:

(1) the aeronautical information appropriate for the aeronautical charting provisions is obtained from organizations that provide services in support of the Libyan air navigation system; and

(2) the validity and accuracy of aeronautical information are properly checked; and

(3) the Aeronautical information supplied complies with the standards defined under this Regulation.

(c) Arrangements for the timely provision of information are made with the information originators prescribed in Paragraph (b)(1); and

(d) Information received from the data originators prescribed in paragraph (b)(1) is certified as accurate by a person identified by the originator to be responsible for the accuracy of that information.

Chart.095 Maintenance of Aeronautical Charts

(a) An applicant for the grant of an Aeronautical Charts services certificate shall establish procedure to ensure that the information on aeronautical charts produced under the authority of their certificate are comprehensive, accurate and in compliance with this Part.

(b) The procedure shall ensure that the charts are reviewed regularly and maintained up to date by a defined revision/amendment service for the AIP/aeronautical charts in accordance with ICAO Aeronautical Chart Manual (Doc-8697) Chapter 3, Maintenance of Charts.

Chart.100 Error correction in published information

(a) An applicant for the grant of an Aeronautical Charts services certificate shall establish procedures to record, investigate, correct and report any errors that are detected in the aeronautical charts listed in their exposition.

(b) The procedures shall ensure that:

(1) the error is corrected by the most appropriate means relative to the operational significance of the error; and

(2) the correction is clearly identified in the republished information; and

(3) the source of the error is identified and, where possible, eliminated; and

(4) the Authority is notified of a promulgated information incident.

Chart.105 Records

(a) Each applicant for the grant of an Aeronautical Charts services certificate shall establish procedures to identify, collect, index, store, maintain and dispose of the records that are necessary for the aeronautical charts services listed in their exposition.

(b) The procedures shall ensure that:

(1) there are records enabling all incoming and outgoing aeronautical information to be readily identified by serial number, date and that supplementary information can be similarly verified and, where necessary, authenticated; and

(2) there is a record of each person who is authorized by the applicant to check, edit and publish aeronautical information; and

(3) That the records specified are retained for a period of at least three (3) years or for such longer period as may be required by the Authority; and

(4) The providing of a record of each occurrence of erroneous of aeronautical charting information reported and detected under the procedures required by Chart.100. The record shall detail the nature of the erroneous an aeronautical charting information and the findings of the investigation and the follow-up corrective actions; and

(5) That there is a record of each personnel experience, qualifications, training, competence assessments and current authorizations, for each person who is authorized to provide aeronautical charting service,

(c) All Aeronautical Charts Service records related to Aeronautical Charts services shall be retained for a period of at least three years unless a longer period is required for retrieval if needed for an aviation safety investigation.

Chart.110 Organization Exposition

(a) An applicant for the grant of an Aeronautical Charts services certificate shall provide the Authority with an exposition containing:

(1) a statement signed by the Chief Executive on behalf of the applicant's organization confirming that:

i. the exposition and any included manuals define the organization and demonstrate its means and methods for ensuring ongoing compliance with this Part; and

ii. the exposition and any included manuals will be complied with at all times; and

(2) the titles and names of the senior person or persons required by Chart.075 (a)(1) and (2); and

(3) duties and responsibilities of the senior persons specified in paragraph (a)(2) including matters for which they have responsibility to deal directly with the Authority or the Authority on behalf of the organization; and

(4) an organization chart showing lines of responsibility of the senior persons specified in paragraph (a)(2); and

(5) a summary of the applicant's staffing structure for each aeronautical charts service listed under paragraph (a)(6); and

(6) a list of the aeronautical charts services to be covered by the certificate; and

(7) details of the applicant's procedures required regarding:

i. . the competence of personnel; and

ii. the control of documentation; and

iii. the collection of information; and

iv. the production and revision of aeronautical charts; and

v. the correction of errors in published information; and

vi. the identification, collection, indexing, storage, maintenance and disposal of records; and

vii. safety management;

(8) procedures to control, amend and distribute the exposition.

(b) The applicant's exposition must be acceptable to the Authority.

Chart.115 Continued Compliance

Each holder of an Aeronautical Charts services certificate shall:

(a) Hold at least one complete and current copy of their exposition at each office listed in their exposition; and

(b) Comply with all procedures and standards detailed in their exposition; and

(c) Make each applicable part of their exposition available to personnel who require those parts to carry out their duties; and

(d) Continue to meet the standards and comply with the requirements of this Subpart B prescribed for certification under this Part; and

(e) Notify the Authority of any change of address for service, telephone number or facsimile number within twenty-eight (28) days of the change.

Chart.120 Changes to certificate holder's organization

(a) Each holder of an Aeronautical Charts services certificate shall ensure that their exposition is amended such that it maintains a current description of the holder's organization and services.

(b) The certificate holder shall ensure that any amendments made to the holder's exposition meet the applicable requirements of this Part and comply with the amendment procedures contained in the holder's exposition.

(c) The certificate holder shall provide the Authority with a copy of each amendment to the holder's exposition as soon as practicable after its incorporation into the exposition.

(d) Where a certificate holder proposes to make a change to any of the following, prior notification to and acceptance by the Authority is required:

(1) the Chief Executive;

(2) the listed senior persons;

(3) the aeronautical charts services provided by the holder;

(4) the format and standards for the aeronautical charts published under the authority of their certificate.

(e) The Authority may prescribe conditions under which a certificate holder may operate during or following any of the changes specified in paragraph (d).

(f) A certificate holder shall comply with any conditions prescribed under paragraph (e).

(g) Where any of the changes referred to in this Part requires an amendment to the certificate, the certificate holder shall forward the certificate to the Authority as soon as practicable.

(h) The certificate holder shall make such amendments to the holder's exposition, as the Authority may consider necessary in the interests of aviation safety.

Chart.125 Operations manuals

(a) Each holder of an Aeronautical Charts services certificate shall provide and keep up to date its operations manual or system of manuals relating to the provision of the services listed in its exposition for the use and guidance of operations personnel.

(b) Each holder of an aeronautical Charts service shall ensure that:

(1) operations manuals contain the instructions and information required by the operations personnel to perform their duties;

(2) relevant parts of the operations manuals are accessible to the personnel concerned; and

(3) the operations personnel are informed of amendments to the operations manual applying to their duties in a manner that enables their application as of their entry into force.

Subpart C – Operating requirements

Chart.130 Chart provisions

The holder of the Aeronautical Charts services certificate for the Aeronautical charts production and revision shall comply with requirements of Subpart D and while producing or revising:

(a) Aerodrome Obstacle Chart - ICAO Type A (Operating Limitations) shall comply with Subpart E;

(b) Aerodrome Obstacle Chart - ICAO Type B shall comply with Subpart F;

(c) Precision Approach Terrain Chart - ICAO shall comply with Subpart H;

(d) En-route Chart - ICAO shall comply with Subpart I;

(e) Area Chart - ICAO shall comply with Subpart J;

(f) Standard Departure Chart - Instrument (SID) - ICAO shall comply with Subpart K;

(g) Standard Arrival Chart - Instrument (STAR) - ICAO shall comply with Subpart L;

(h) Instrument Approach Chart - ICAO shall comply with Subpart M;

(i) Visual Approach Chart - ICAO shall comply with Subpart N;

(j) Aerodrome/Heliport Chart - ICAO shall comply with Subpart O;

(k) Aerodrome Ground Movement Chart - ICAO shall comply with Subpart P;

(l) Aircraft Parking/Docking Chart - ICAO shall comply with Subpart Q;

(m) World Aeronautical Chart - ICAO 1:1 000 000 shall comply with Subpart R;

(n) ATC Surveillance Minimum Altitude Chart - ICAO shall comply with Subpart W.

Chart.135 Regulatory approval of Aeronautical Charts

(a) The aeronautical charts submitted to the aeronautical information service provider will require regulatory approval by the Authority before publication.

(b) The Aeronautical Charts Service provider shall ensure that an approval has been granted by the Authority before submitting for publication new or revised aeronautical charts.

(c) The Aeronautical Charts Service provider shall take account of the additional time required by the Authority for the approvals process.

Subpart D — General specifications

Chart.140 Operational requirements for charts

For the purposes of this Regulation, the total flight is divided into the following phases:

Phase 1 - Taxi from aircraft stand to take-off point

Phase 2 - Take-off and climb to en-route ATS route structure

Phase 3 - En-route ATS route structure

Phase 4 - Descent to approach

Phase 5 - Approach to land and missed approach

Phase 6 - Landing and taxi to aircraft stand.

(a) Each type of chart shall provide information relevant to the function of the chart and its design shall observe Human Factors principles which facilitate its optimum use.

(b) Each type of chart shall provide information appropriate to the phase of flight to ensure the safe and expeditious operation of the aircraft.

(c) The presentation of information shall be accurate, free from distortion and clutter, unambiguous and be readable under all normal operating conditions.

(d) Colors or tints and type size used shall be such that the chart can be easily read and interpreted by the pilot in varying conditions of natural and artificial light.

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

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

(g) The charts shall be True North orientated.

(h) The basic sheet size of the charts shall be 210 × 297 mm (8.27 × 11.69 in) (A4).

Chart.145 Titles

The title of a chart or chart series prepared in accordance with the specifications contained in this Subpart and intended to satisfy the function of the chart shall be that of the relevant chapter heading as modified by application of any Standard contained therein, except that such title shall not include “ICAO” unless the chart conforms with all regulations specified in this subpart and any specified for the particular chart.

Chart.150 Miscellaneous information

(a) The marginal note layout shall be as defined by ICAO standards, except as otherwise specified for a particular chart.

(b) The following information shall be shown on the face of each chart unless otherwise stated in the specification of the chart concerned:

(1) designation or title of the chart series;

(2) name and reference of the sheet;

(3) on each margin an indication of the adjoining sheet (when applicable).

(c) A legend to the symbols and abbreviations used shall be provided. The legend 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.

Chart.155 Symbols

(a) Symbols used shall conform to 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) To represent ground-based navigation aids, intersections and waypoints, the same basic symbol shall be used on all charts on which they appear, regardless of chart purpose.

(c) The symbol used for significant points shall be based on a hierarchy of symbols and selected in the following order: ground-based navigation aid, intersection, waypoint symbol. A waypoint symbol shall be used only when a particular significant point does not already exist as either a ground-based navigation aid or intersection.

(d) The Aeronautical Charts Service provider shall ensure that symbols are shown in the manner specified in ICAO Chart Symbols.

Chart.160 Units of measurement

(a) Distances shall be derived as geodesic distances.

(b) Distances shall be expressed in either kilometers or nautical miles or both, provided the units are clearly differentiated.

(c) Altitudes, elevations and heights shall be expressed in either meters or feet or both, provided the units are clearly differentiated.

(d) Linear dimensions on aerodromes and short distances shall be expressed in meters.

(e) The order of resolution of distances, dimensions, elevations and heights shall be that as specified for a particular chart.

(f) The units of measurement used to express distances, altitudes, elevations and heights shall be conspicuously stated on the face of each chart.

(g) Conversion scales (kilometers/nautical miles, meters/feet) shall be provided on each chart on which distances, elevations or altitudes are shown. The conversion scales shall be placed on the face of each chart.

Chart.165 Scale and projection

(a) For charts of large areas, the name and basic parameters and scale of the projection shall be indicated.

(b) For charts of small areas, a linear scale only shall be indicated.

Chart.170 Date of validity of aeronautical information

The date of validity of aeronautical information shall be clearly indicated on the face of each chart.

Chart.175 Spelling of geographical names

(a) The symbols of the Roman alphabet shall be used for all writing.

(b) The names of places and of geographical features in countries which officially use varieties of the Roman alphabet shall be accepted in their official spelling, including the accents and diacritical marks used in the respective alphabets.

(c) Where a geographical term such as “cape”, “point”, “gulf”, “river” is abbreviated on any particular chart that word shall be spelt out in full in the language used by the Aeronautical Charts Service provider, in respect of the most important example of each type. Punctuation marks shall not be used in abbreviations within the body of a chart.

(d) In areas where Romanized names have not been officially produced or adopted and outside the territory of the Libya, names shall be transcribed from the non-Roman alphabet form by the system generally used by the Aeronautical Charts Service provider.

Chart.180 Abbreviations

(a) Abbreviations shall be used on aeronautical charts whenever they are appropriate.

(b) Where applicable, abbreviations shall be selected from the Procedures for Air Navigation Services — ICAO Abbreviations and Codes (Doc 8400).

Chart.185 Political boundaries

(a) International boundaries shall be shown, but may be interrupted if data more important to the use of the chart would be obscured.

(b) Where the territory of more than one State appears on a chart, the names identifying the countries shall be indicated.

Chart.190 Colors

Colors used on charts shall conform to ICAO Color Guide, Annex 4, Appendix 3.

Chart.195 Relief

(a) Relief, where shown, shall be portrayed in a manner that will satisfy the chart users' need for:

(1) orientation and identification;

(2) safe terrain clearance;

(3) clarity of aeronautical information when shown;

(4) planning.

(b) Where relief is shown by hypsometric tints, the tints used shall be based on the ICAO Hypsometric Tint Guide.

(c) Where spot elevations are used, they shall be shown for selected critical points.

(d) The value of spot elevations of doubtful accuracy shall be followed by the sign ±.

Chart.200 Prohibited, Restricted and Danger Areas

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

Chart.205 Air traffic services airspaces

(a) When ATS airspace is shown on a chart, the class of airspace, the type, name or call sign, the vertical limits and the radio frequency(ies) to be used shall be indicated and the horizontal limits depicted in accordance with ICAO Chart Symbols.

(b) On charts used for visual flight, those parts of the ICAO Annex 11, (Appendix 4) – ATS Airspace Classes table in applicable to the airspace depicted on the chart shall be on the face or reverse of each chart.

Chart.210 Magnetic variation

(a) True North and magnetic variation shall be indicated. The order of resolution of magnetic variation shall be that as specified for a particular chart.

(b) When magnetic variation is shown on a chart, the values shown shall be those for the year nearest to the date of publication that is divisible by 5 (i.e. 1980, 1985, etc.). In exceptional cases where the current value would be more than one degree different, after applying the calculation for annual change, an interim date and value shall be quoted.

(c) For instrument procedure charts, the publication of a magnetic variation change shall be completed within a maximum of six AIRAC cycles.

(d) In large terminal areas with multiple aerodromes, a single rounded value of magnetic variation shall be applied so that the procedures that service multiple aerodromes use a single, common variation value.

Chart.215 Topography

When topographical features are required on an aeronautical chart, these features shall be displayed in compliance with ICAO Document 8697 – Aeronautical Chart Manual.

Chart.220 Aeronautical data

(a) The Aeronautical Charts Service provider shall take all necessary measures to introduce a properly organized quality management system containing procedures, processes and resources necessary to implement quality management at each function stage as outlined in Part AIS.325 Quality Management System. The execution of such quality management shall be made demonstrable for each function stage, when required. In addition, the Aeronautical Charts Service provider shall ensure that 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/maintenance phases or in the operational use, to be corrected.

(b) The Aeronautical Charts Service provider shall ensure that the chart resolution of aeronautical data shall be that as specified for a particular chart.

(c) The Aeronautical Charts Service provider shall ensure that integrity of aeronautical data is maintained throughout the data process from origination to distribution to the next intended user.

(d) Digital data error detection techniques shall be used during the transmission and/or storage of aeronautical data and digital data sets.

Chart.225 Common reference systems

(a) Horizontal reference system

(1) World Geodetic System — 1984 (WGS-84) shall be used as the horizontal (geodetic) reference system. Published aeronautical geographical coordinates (indicating latitude and longitude) shall be expressed in terms of the WGS-84 geodetic reference datum.

Note: Comprehensive guidance material concerning WGS-84 is contained in the World Geodetic System — 1984 (WGS-84) Manual (Doc 9674).

(2) Geographical coordinates which have been transformed into WGS-84 coordinates but whose accuracy of original field work does not meet the requirements in Annex11, Chapter 2, and Annex 14, Volumes I and II, Chapter 2, shall be identified by an asterisk.

(3) The chart resolution of geographical coordinates shall be that specified for a particular chart series.

(b) Vertical reference system

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

(2) In addition to the elevations referenced to MSL, for the specific surveyed ground positions, geoid undulation (referenced to the WGS-84 ellipsoid) for those positions shall also be published as specified for a particular chart.

(3) The chart resolution of elevation and geoid undulation shall be that specified for a particular chart series.

(c) Temporal reference system

(1) The Gregorian calendar and Coordinated Universal Time (UTC) shall be used as the temporal reference system.

(2) When a different temporal reference system is used for charting, this shall be indicated in GEN 2.1.2 of the Libyan Aeronautical Information Publication (AIP).

Subpart E - Aerodrome Obstacle Chart, ICAO Type A (Operating Limitations)

Chart.230 Function

This chart, in combination with the relevant information published in the Libyan AIP, shall provide the data necessary to enable an operator to comply with the operating limitations of Annex 6, Part I, Chapter 5, and Part III, Section II, Chapter 3.

Chart.235 Availability

(a) Aerodrome Obstacle Charts - ICAO Type A (Operating Limitations) shall be made available in the manner prescribed in Chart.020 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 Subpart G.

(b) Where a chart is not required because no obstacles exist in the take-off flight path area, a notification to this effect shall be published in the Libyan AIP.

Chart.240 Units of measurement

(a) Elevations shall be shown to the nearest half-meter or to the nearest foot.

(b) Linear dimensions shall be shown to the nearest half-meter.

Chart.245 Coverage and scale

(a) The extent of each plan shall be sufficient to cover all obstacles.

(b) The horizontal scale shall be within the range of 1:10 000 to 1:15 000

(c) The vertical scale shall be ten times the horizontal scale.

(d) Linear scales. Horizontal and vertical linear scales showing both meters and feet shall be included in the charts.

Chart.250 Format

(a) The charts shall depict a plan and profile of each runway, any associated stop-way or clearway, the take-off flight path area and obstacles.

(b) The profile for each runway, stop-way, clearway and the obstacles in the take-off flight path area shall be shown above its corresponding plan. The profile of an alternative take-off flight path area shall comprise a linear projection of the full take-off flight path and shall be disposed above its corresponding plan in the manner most suited to the ready interpretation of the information.

(c) A profile grid shall be ruled over the entire profile area exclusive of the runway. The zero for vertical coordinates shall be mean sea level. The zero for horizontal coordinates shall be the end of the runway furthest from the take-off flight path area concerned. Graduation marks indicating the sub-divisions of intervals shall be shown along the base of the grid and along the vertical margins.

(d) The vertical grid shall have intervals of 30 m (100 ft) and the horizontal grid shall have intervals of 300 m (1,000 ft).

(e) The chart shall include:

(1) a box for recording the operational data specified in Chart.265 (c);

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

Chart.255 Identification

The chart shall be identified by the name of the country in which the aerodrome is located, the name of the city or town or area that the aerodrome serves, the name of the aerodrome and the designator(s) of the runway(s).

Chart.260 Magnetic variation

The magnetic variation to the nearest degree and date of information shall be indicated.

Chart.265 Aeronautical data

(a) Obstacles

(1) 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 shall be regarded as obstacles, except those obstacles lying wholly below the shadow of other obstacles as defined in (2) need not be shown. 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.

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

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

(b) Take-off flight path area

(1) The 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. This area has the following characteristics:

i. it commences at the end of the area declared suitable for take-off (i.e. at the end of the runway or clearway as appropriate);

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.

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

Note: When a 1.0 per cent survey plane touches no obstacles, this plane may be lowered until it touches the first obstacle.

(c) Declared distances

(1) The following information for each direction of each runway shall be entered in the space provided:

i. take-off run available;

ii. accelerate-stop distance available;

iii. take-off distance available;

iv. landing distance available.

(2) Where a declared distance is not provided because a runway is usable in one direction only, that runway shall be identified as “not usable for take-off, landing or both”.

(d) Plan and profile views

(1) The plan view shall show:

i. 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;

ii. the outline of the clearways by a broken line, including the length and identification as such;

iii. take-off flight path areas by a dashed line and the center line by a fine line consisting of short and long dashes;

iv. alternative take-off flight path areas. When alternative take-off flight path areas not centered on the extension of the runway center line are shown, notes shall be provided explaining the significance of such areas;

v. obstacles, including:

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

(2) The nature of the runway and stop-way surfaces shall be indicated.

(3) Stop-ways shall be identified as such and shall be shown by a broken line.

(4) When stop-ways are shown, the length of each stop-way shall be indicated.

(5) The profile view shall show:

i. the profile of the center line of the runway by a solid line and the profile of the center line of any associated stop-ways and clearways by a broken line;

ii. the elevation of the runway center line at each end of the runway, at the stop-way and at the origin of each take- off flight path area, and at each significant change in slope of runway and stop-way;

iii. obstacles, including:

- 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;
- identification of each obstacle;
- the limits of penetration of obstacles of large extent in a distinctive manner identified in the legend.

Chart.270 Accuracy

(a) The order of accuracy attained shall be shown on the chart.

(b) The horizontal dimensions and the elevations of the runway, stop-way and clearway to be printed on the chart shall be determined to the nearest 0.5 m (1 ft).

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

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

(2) vertical distances: 0.5 m (1.5 ft) in the first 300 m (1,000ft) and increasing at a rate of 1.0 m (3 ft) per 300 m (1,000 ft).

(d) Datum. Where no accurate datum for vertical reference is available, the elevation of the datum used shall be stated and shall be identified as assumed.

Subpart F - Aerodrome Obstacle Chart, ICAO Type B

Chart.275 Function

This chart shall provide 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.

Chart.280 Availability

(a) Aerodrome Obstacle Charts - ICAO Type B shall be made available, in the manner prescribed in Chart.020, 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 Subpart G.

(b) When a chart combining the specifications of Subpart E and Subpart F is made available, it shall be called the Aerodrome Obstacle Chart - ICAO (Comprehensive).

Chart.285 Units of measurement

(a) Elevations shall be shown to the nearest half-meter or to the nearest foot.

(b) Linear dimensions shall be shown to the nearest half-meter.

Chart.290 Coverage and scale

(a) The extent of each plan shall be sufficient to cover all obstacles.

(b) The horizontal scale shall be within the range of 1:10,000 to 1: 20,000.

(c) A horizontal linear scale showing both meters and feet shall be included in the chart. When necessary, a linear scale for kilometers and a linear scale for nautical miles shall also be shown.

Chart.295 Format

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 Annex 14, Volume I, Chapter 4;

(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.

Chart.300 Identification

The chart shall be 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.

Chart.305 Culture and topography

(a) Drainage and hydrographic details shall be kept to a minimum.

(b) Buildings and other salient features associated with the aerodrome shall be shown. Wherever possible, they shall be shown to scale.

(c) All objects, either cultural or natural, that project above the take-off and approach surfaces specified in Chart.315 or the clearing and marking surfaces specified in Annex 14, Volume I, Chapter 4, shall 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.

Chart.310 Magnetic variation

The chart shall show 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.

Chart.315 Aeronautical Data

(a) The charts shall show:

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

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

(3) the length and width of the runway;

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

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

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

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

(8) the length of each stop-way;

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

(10) the length of each clearway;

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

(12) take-off and approach areas;

(13) obstacles at their exact location, including:

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;

(14) any additional obstacles, as determined by Chart.265 (a) (1) including the obstacles in the shadow of an obstacle, which would otherwise be exempted.

(b) The nature of the runway and stop-way surfaces shall be given.

(c) Wherever practicable, 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.

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

Chart.320 Accuracy

(a) The order of accuracy attained shall be shown on the chart.

(b) The horizontal dimensions and the elevations of the movement area, stop-ways and clearways to be printed on the chart shall be determined to the nearest 0.5 m (1 ft).

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

(1) Take-off and approach areas:

i. horizontal distances: 5 m (15 ft) at 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 (1,000 ft) and increasing at a rate of 1 per 1,000.

(2) Other areas:

i. horizontal distances: 5m (15 ft) within 5,000 m (15,000 ft) of the aerodrome reference point and 12m (40 ft) beyond that area;

ii. vertical distances: 1m (3 ft) within 1,500 m (5,000 ft) of the aerodrome reference point increasing at a rate of 1 per 1,000.

(d) Datum. Where no accurate datum for vertical reference is available, the elevation of the datum used shall be stated and identified as assumed.

Subpart G

Reserved for “Aerodrome Terrain and Obstacle Chart - ICAO (Electronic)”

Subpart H - Precision Approach Terrain Chart, ICAO

Chart.325 Function

The chart shall provide detailed terrain profile information within a defined portion of the final approach to enable aircraft operating agencies to assess the effect of the terrain on decision height determination by the use of radio altimeters.

Chart.330 Availability

(a) The Precision Approach Terrain Chart - ICAO shall be 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 Subpart G.

(b) The Precision Approach Terrain Chart - ICAO shall be revised whenever any significant change occurs.

Chart.335 Scale

(a) The horizontal scale shall be 1:2,500 and the vertical scale 1:500.

(b) When the chart includes a profile of the terrain to a distance greater than 900 m (3,000 ft) from the runway threshold, the horizontal scale shall be 1: 5,000.

Chart.340 Identification

The chart shall be 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.

Chart.345 Plan and profile information

(a) the chart includes:

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

(2) 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 center line profile and is likely to affect a radio altimeter;

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

(b) Where the terrain at a distance greater than 900 m (3,000 ft) from the runway threshold is mountainous or otherwise significant to users of the chart, the profile of the terrain shall be shown to a distance not exceeding 2,000 m (6,500 ft) from the runway threshold.

(c) The ILS reference datum height shall be shown to the nearest half meter or foot.

Subpart I - En-Route Chart, ICAO

Chart.350 Function

This chart shall provide flight crews with information to facilitate navigation along ATS routes in compliance with air traffic services procedures.

Chart.355 Availability

(a) The En-route Chart - ICAO shall be made available in the manner prescribed in Chart.020 for all areas where flight information regions have been established.

(b) 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, separate charts shall be provided.

Chart.360 Coverage and scale

(a) Layout of sheet lines shall be determined by the density and pattern of the ATS route structure.

(b) Large variations of scale between adjacent charts showing a continuous route structure shall be avoided.

(c) An adequate overlap of charts shall be provided to ensure continuity of navigation.

Chart.365 Projection

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

(b) Parallels and meridians shall be shown at suitable intervals.

(c) Graduation marks shall be placed at consistent intervals along selected parallels and meridians.

Chart.370 Identification

Each sheet shall be identified by chart series and number.

Chart.375 Culture and topography

(a) Generalized shore lines of all open water areas, large lakes and rivers shall be shown except where they conflict with data more applicable to the function of the chart.

(b) Within each quadrilateral formed by the parallels and meridians, the area minimum altitude shall be shown.

(c) Where charts are not True North orientated, this fact and the selected orientation used shall be clearly indicated.

Chart.380 Magnetic variation

Isogonals shall be indicated and the date of the isogonic information given.

Chart.385 Bearings, tracks and radials

(a) Bearings, tracks and radials shall be magnetic. Where bearings and tracks are additionally provided as true values for RNAV segments, they shall be shown in parentheses to the nearest tenth of a degree, e.g., 290° (294.9°T).

(b) Where bearings, tracks or radials are given with reference to True North or Grid North, this shall be clearly indicated. When Grid North is used, its reference grid meridian shall be identified.

Chart.390 Aeronautical data

(a) Aerodromes. All aerodromes used by international civil aviation to which an instrument approach can be made shall be shown.

(b) Prohibited, restricted and danger areas. Prohibited, restricted and danger areas relevant to the layer of airspace shall be depicted with their identification and vertical limits.

(c) Air traffic services system:

(1) Where appropriate, the components of the established air traffic services system shall be shown.

(2) The components shall 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. an indication of all designated airspace, including lateral and vertical limits and the appropriate class of airspace;

iv. All ATS 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 ATS 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,

- the station identification and radio frequency of the reference VOR/DME;

- the bearing to the nearest tenth of a degree and the distance to the nearest two-tenths of a kilometer (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 kilometer 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 kilometer 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 meters or 100 feet (see ICAO Annex 11, 2.23);

xi. communication facilities listed with their channels and, if applicable, logon address;

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

(d) Supplementary information

(1) Details of departure and arrival routes and associated holding patterns in terminal areas shall be shown unless they are shown on an Area Chart, a Standard Departure Chart - Instrument (SID) - ICAO or a Standard Arrival Chart - Instrument (STAR) - ICAO.

(2) Where established, altimeter-setting regions shall be shown and identified.

Subpart J - Area Chart, ICAO

Chart.395 Function

This chart shall provide the flight crew with information to facilitate the following phases of instrument flight:

(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.

Chart.400 Availability

(a) The Area Chart - ICAO shall be made available in the manner prescribed in Chart.020 where the air traffic services routes or position reporting requirements are complex and cannot be adequately shown on an En-route Chart - ICAO.

(b) Where air traffic services routes or position reporting requirements are different for arrivals and for departures and these cannot be shown with sufficient clarity on one chart, separate charts shall be provided.

Chart.405 Coverage and Scale

(a) The coverage of each chart shall extend to points that effectively show departure and arrival routes.

(b) The chart shall be drawn to scale and a scale-bar shown.

Chart.410 Projection

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

(b) Parallels and meridians shall be shown at suitable intervals.

(c) Graduation marks shall be placed at consistent intervals along the neat lines, as appropriate.

Chart.415 Identification

The chart shall be identified by a name associated with the airspace portrayed.

Chart.420 Culture and Topography

(a) Generalized shorelines of all open water areas, large lakes and rivers shall be shown except where they conflict with data more applicable to the function of the chart.

(b) To improve situational awareness in areas where significant relief exists, 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. Appropriate spot elevations, including the highest elevation within each top contour line, shall be shown printed in black. Obstacles shall also be shown.

Chart.425 Magnetic Variation

The average magnetic variation of the area covered by the chart shall be shown to the nearest degree.

Chart.430 Bearings, Tracks and Radials

(a) Bearings, tracks and radials shall be magnetic. Where bearings and tracks are additionally provided as true values for RNAV segments, they shall be shown in parentheses to the nearest tenth of a degree, e.g., 290° (294.9°T).

(b) Where bearings, tracks or radials are given with reference to True North or Grid North, this shall be clearly indicated. When Grid North is used, its reference grid meridian shall be identified.

Chart.435 Aeronautical Data

(a) Aerodromes:

All aerodromes which affect the terminal routings shall be shown. Where appropriate, a runway pattern symbol shall be used.

(b) Prohibited, restricted and danger areas:

Prohibited, restricted and danger areas shall be depicted with their identification and vertical limits.

(c) Area minimum altitudes:

Area minimum altitudes shall be shown within quadrilaterals formed by the parallels and meridians.

(d) Air traffic services system

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

(2) The components shall 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,

- the station identification and radio frequency of the reference VOR/DME;
- the bearing to the nearest tenth of a degree and the distance to the nearest two-tenths of a kilometer (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 kilometer 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 omnidirectional radio ranges, indicating the distances to the nearest kilometer 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 meters or 100 feet (see ICAO Annex 11, 2.23);

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;

xvi. an indication of “flyover” significant points.

Subpart K - Standard Departure Chart - Instrument (SID) - ICAO

Chart.440 Function

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

Chart.445 Availability

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

Chart.450 Coverage and Scale

(a) The coverage of the chart shall be 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) The chart shall be drawn to scale.

(c) If the chart is drawn to scale, a scale-bar shall be shown.

(d) When the chart is not drawn to scale, the annotation “NOT TO SCALE” shall be shown 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.

Chart.455 Projection

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

(b) When the chart is drawn to scale, parallels and meridians shall be shown at suitable intervals.

(c) Graduation marks shall be placed at consistent intervals along the neat lines.

Chart.460 Identification

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 departure route(s) — instrument as established in accordance with the Procedures for Air Navigation Services — Aircraft Operations (PANS-OPS, Doc 8168), Volume II, Part I, Section 3, Chapter 5.

Chart.465 Culture and Topography

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

(b) To improve situational awareness in areas where significant relief exists, 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. Appropriate spot elevations, including the highest elevation within each top contour line, shall be shown printed in black. Obstacles shall also be shown.

Chart.470 Magnetic Variation

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

Chart.475 Bearings, Tracks and Radials

(a) Bearings, tracks and radials shall be magnetic. Where bearings and tracks are additionally provided as true values for RNAV segments, they shall be shown in parentheses to the nearest tenth of a degree, e.g., 290° (294.9°T).

(b) Where bearings, tracks or radials are given with reference to True North or Grid North, this shall be clearly indicated. When Grid North is used, its reference grid meridian shall be identified.

Chart.480 Aeronautical data

(a) Aerodromes:

(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. Where appropriate, the aerodrome runway patterns shall be shown.

(b) Prohibited, restricted and danger areas:

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

(c) Minimum sector altitude:

(1) (1) The established minimum sector altitude, based on a navigation aid associated with the procedure, shall be shown with a clear indication of the sector to which it applies.

(2) (2) Where the minimum sector altitude has not been established, the chart shall be drawn to scale and area minimum altitudes shall be shown within quadrilaterals formed by the parallels and meridians. Area minimum altitudes shall also be shown in those parts of the chart not covered by the minimum sector altitude.

(d) Air traffic services system:

(1) The components of the established relevant air traffic services system shall be shown. The components shall comprise the following:

i. a graphic portrayal of each standard departure route — instrument, including:
   - for departure procedures designed specifically for helicopters, the term “CAT H” shall be depicted in the departure chart plan view;
   - route designator;
   - significant points defining the route;
   - track or radial to the nearest degree along each segment of the route;
   - distances to the nearest kilometer or nautical mile between significant points;
   - 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;
   - 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;

ii. the radio navigation aid(s) associated with the route(s) including:
   - when the radio navigation aid is used for conventional navigation:
   - plain language name;
   - identification;
   - Morse code;
   - frequency;
   - geographical coordinates in degrees, minutes and seconds; and
   - for DME, the channel and the elevation of the transmitting antenna of the DME to the nearest 30 m (100 ft);
   - when the radio navigation aid is used as a significant point for area navigation:
     - plain language name; and
     - identification;

iii. significant points not marked by the position of a radio navigation aid including:
   - when the significant point is used for conventional navigation:
     - name-code;
     - geographical coordinates in degrees, minutes and seconds;
     - bearing to the nearest tenth of a degree from the reference radio navigation aid;

- distance to the nearest two-tenths of a kilometer (tenth of a nautical mile) from the reference radio navigation aid; and
- identification of the reference radio navigation aid;

- when the significant point is used for area navigation:
  - name-code;

iv. applicable holding patterns;

v. transition altitude/height to the nearest higher 300 m or 1,000 ft;

vi. 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;

vii. area speed restrictions, where established;

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

ix. all compulsory and “on-request” reporting points;

x. radio communication procedures, including:

- call sign(s) of ATS unit(s);
- frequency and, if applicable, SATVOICE number;
- transponder setting, where appropriate;
- an indication of “flyover” significant points.

(2) 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.

(3) Aeronautical database requirements. Appropriate data to support navigation database coding shall be published in accordance with the Procedures for Air Navigation Services - Aircraft Operations (PANS-OPS, Doc 8168), Volume II, Part III, Section 5, Chapter 2, 2.1, on the verso of the chart or as a separate, properly referenced sheet.

Subpart L - Standard Arrival Chart - Instrument (STAR), ICAO

Chart.485 Function

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.

Chart.490 Availability

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.

Chart.495 Coverage and Scale

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

(b) The chart shall be drawn to scale.

(c) If the chart is drawn to scale, a scale-bar shall be shown.

(d) When the chart is not drawn to scale, the annotation “NOT TO SCALE” shall be shown 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.

Chart.500 Projection

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

(b) When the chart is drawn to scale, parallels and meridians shall be shown at suitable intervals.

(c) Graduation marks shall be placed at consistent intervals along the neat lines.

Chart.505 Identification

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 8168), Volume II, Part I, Section 4, Chapter 2.

Chart.510 Culture and Topography

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

(b) To improve situational awareness in areas where significant relief exists, 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. Appropriate spot elevations, including the highest elevation within each top contour line, shall be shown printed in black. Obstacles shall also be shown.

Chart.515 Magnetic variation

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

Chart.520 Bearings, Tracks and Radials

(a) Bearings, tracks and radials shall be magnetic. Where bearings and tracks are additionally provided as true values for RNAV segments, they shall be shown in parentheses to the nearest tenth of a degree, e.g., 290° (294.9°T).

(b) Where bearings, tracks or radials are given with reference to True North or Grid North, this shall be clearly indicated. When Grid North is used, its reference grid meridian shall be identified.

Chart.525 Aeronautical data

(a) Aerodromes:

(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.

(b) Prohibited, restricted and danger areas:

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

(c) Minimum sector altitude:

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

(2) Where the minimum sector altitude has not been established, the chart shall be drawn to scale and area minimum altitudes shall be shown within quadrilaterals formed by the parallels and meridians. Area minimum altitudes shall also be shown in those parts of the chart not covered by the minimum sector altitude.

(d) Air traffic services system:

(1) The components of the established relevant air traffic services system shall be shown. The components shall comprise the following:

i. a graphic portrayal of each standard arrival route — instrument, including:

- route designator;
- significant points defining the route;
- track or radial to the nearest degree along each segment of the route;
- distances to the nearest kilometer or nautical mile between significant points;
- 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;
- 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;

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

- when the radio navigation aid is used for conventional navigation:
- plain language name;
- identification;
- Morse code;
- frequency;
- geographical coordinates in degrees, minutes and seconds; and
- for DME, the channel and the elevation of the transmitting antenna of the DME to the nearest 30 m (100 ft);
- when the radio navigation aid is used as a significant point for area navigation:
- plain language name; and
- identification;

iii. significant points not marked by the position of a radio navigation aid including:

- when the significant point is used for conventional navigation:
  - name-code;

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

- when the significant point is used for area navigation:
  - name-code;

iv. applicable holding patterns;

v. transition altitude/height to the nearest higher 300 m or 1,000 ft;

vi. area speed restrictions, where established;

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

viii. all compulsory and “on-request” reporting points;

ix. radio communication procedures, including:

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

x. an indication of “flyover” significant waypoints; and

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

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

(3) Aeronautical database requirements. Appropriate data to support navigation database coding shall be published in accordance with the Procedures for Air Navigation Services — Aircraft Operations (PANS-OPS, Doc 8168), Volume II, Part III, Section 5, Chapter 2, 2.2, on the verso of the chart or as a separate, properly referenced sheet.

Subpart M - Instrument Approach Chart, ICAO

Chart.530 Function

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

Chart.535 Availability

(a) Instrument Approach Charts - ICAO shall be made available for all aerodromes used by international civil aviation where instrument approach procedures have been established by the air navigation service provider or the aerodrome operator.

(b) A separate Instrument Approach Chart - ICAO shall normally be provided for each precision approach procedure established by the air navigation service provider or the aerodrome operator.

(c) A separate Instrument Approach Chart - ICAO shall normally be provided for each non-precision approach procedure established by the air navigation service provider or the aerodrome operator.

(d) 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, more than one chart shall be provided.

(e) Instrument Approach Charts - ICAO shall be revised whenever information essential to safe operation becomes out of date.

Chart.540 Coverage and Scale

(a) The coverage of the chart shall be 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 shall ensure optimum legibility consistent with:

(1) the procedure shown on the chart;

(2) sheet size.

(c) A scale indication shall be given.

(d) Except where this is not practicable, a distance circle with a radius of 20 km (10 NM) centered on a DME located on or close to the aerodrome, or on the aerodrome reference point where no suitable DME is available, shall be shown; its radius shall be indicated on the circumference.

(e) A distance scale shall be shown directly below the profile.

Chart.545 Format

The sheet size shall be 210 × 297 mm (8.27 × 11.69 in) (A4).

Chart.550 Projection

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

(b) Graduation marks shall be placed at consistent intervals along the neat lines.

Chart.555 Identification

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 instrument approach procedure as established in accordance with the ICAO Procedures for Air Navigation Services - Aircraft Operations (PANS-OPS, Doc 8168), Volume II, Part I, Section 4, Chapter 9.

Chart.560 Culture and Topography

(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 (circling) procedure when established, shall be shown. Topographic information shall be named, only when necessary, to facilitate the understanding of such information, and the minimum shall be a delineation of land masses and significant lakes and rivers.

(b) Relief shall be shown in a manner best suited to the particular elevation characteristics of the area. 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 shall be 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, shall also be shown printed in black.

(c) In areas where relief is lower than specified in (b), all relief exceeding 150 m (500 ft) above the aerodrome elevation shall be 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, shall also be shown and printed in black.

Chart.565 Magnetic Variation

(a) The magnetic variation shall be shown.

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

Chart.570 Bearings, Tracks and Radials

(a) Bearings, tracks and radials shall be magnetic. Where bearings and tracks are additionally provided as true values for RNAV segments, they shall be shown in parentheses to the nearest tenth of a degree, e.g., 290° (294.9°T).

(b) Where bearings, tracks or radials are given with reference to True North or Grid North, this shall be clearly indicated. When Grid North is used, its reference grid meridian shall be identified.

Chart.575 Aeronautical Data

(a) Aerodromes:

(1) All aerodromes which show a distinctive pattern from the air shall be shown by the appropriate symbol. Abandoned aerodromes shall be identified as abandoned.

(2) The runway pattern, at a scale sufficiently large to show it clearly, shall be 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.

(3) The aerodrome elevation shall be shown to the nearest meter or foot in a prominent position on the chart.

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

(b) Obstacles:

(1) Obstacles shall be shown on the plan view of the chart.

(2) If one or more obstacles are the determining factor of an obstacle clearance altitude/height, those obstacles shall be identified.

(3) The elevation of the top of obstacles shall be shown to the nearest (next higher) meter or foot.

(4) The heights of obstacles above a datum other than mean sea level (see part (3) above) shall be shown. When shown, they shall be given in parentheses on the chart.

(5) When the heights of obstacles above a datum other than mean sea level are shown, the datum shall be the aerodrome elevation except that, at aerodromes having an instrument runway (or runways) 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.

(6) Where a datum other than mean sea level is used, it shall be stated in a prominent position on the chart.

(7) Where an obstacle free zone has not been established for a precision approach runway Category I, this shall be indicated.

(c) Prohibited, restricted and danger areas

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

(d) Radio communication facilities and navigation aids:

(1) Radio navigation aids required for the procedures together with their frequencies, identifications and track-defining characteristics, if any, shall be shown. In the case of a procedure in which more than one station is located on the final approach track, the facility to be used for track guidance for final approach shall be clearly identified. In addition, consideration shall be given to the elimination from the approach chart of those facilities that are not used by the procedure. When a radio navigation aid is used as a significant point for area navigation, only its plain language name and identification shall be shown.

(2) The initial approach fix (IAF), the intermediate approach fix (IF), the final approach fix (FAF) (or final approach point (FAP) for an ILS approach procedure), the missed approach point (MAPt), where established, and other essential fixes or points comprising the procedure shall be shown and identified.

(3) When the final approach fix is used for conventional navigation (or final approach point for an ILS approach procedure), it shall be identified with its geographical coordinates in degrees, minutes and seconds.

(4) Radio navigation aids that might be used in diversionary procedures together with their track-defining characteristics, if any, shall be shown or indicated on the chart.

(5) Radio communication frequencies, including call signs, that are required for the execution of the procedures shall be shown.

(6) When required by the procedures, the distance to the aerodrome from each radio navigation aid concerned with the final approach shall be shown to the nearest kilometer or nautical mile. When no track-defining aid indicates the bearing of the aerodrome, the bearing shall also be shown to the nearest degree.

(e) Minimum sector altitude or terminal arrival altitude:

The minimum sector altitude or terminal arrival altitude established by the Authority shall be shown, with a clear indication of the sector to which it applies.

(f) Portrayal of procedure tracks:

(1) The plan view shall show the following information in the manner indicated:

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

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

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

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

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

vi. the boundaries of any sector in which visual maneuvering (circling) 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;

ix. an indication of “flyover” significant points.

(2) The plan view shall show the distance to the aerodrome from each radio navigation aid concerned with the final approach.

(3) A profile shall be 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 ii) and iii), by an arrowed dotted line;

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

vi. altitudes/heights required by the procedures, including transition altitude and procedure altitudes/heights, where established;

vii. limiting distance to the nearest kilometer 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.

(4) Heights required by procedures shall be shown in parentheses, using the height datum selected in accordance with (b) (5).

(5) The profile view shall include a ground profile or a minimum altitude/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/heights in the intermediate and final approach segments indicated within bounded shaded blocks.

(g) Aerodrome operating minima

(1) Aerodrome operating minima when established by the Authority shall be shown.

(2) The obstacle clearance altitudes/heights for the aircraft categories for which the procedure is designed shall be shown; for precision approach procedures, additional OCA/H for Cat DL aircraft (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) shall be published, when necessary.

(h) Supplementary information:

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

i. a distance from the final approach fix, 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 kilometer or tenth of a nautical mile and a table showing ground speeds and times from the final approach fix to the missed approach point shall be shown.

(2) When DME is required for use in the final approach segment, a table showing altitudes/heights for each 2 km or 1 NM, as appropriate, shall be shown. The table shall not include distances, which would correspond to altitudes/heights below the OCA/H.

(3) 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, a table showing the altitudes/heights shall be included.

(4) A rate of descent table shall be shown.

(5) For non-precision approach procedures with a final approach fix, 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 shall be shown.

(6) For precision approach procedures and approach procedures with vertical guidance, the reference datum height to the nearest half meter or foot and the glide path/elevation/vertical path angle to the nearest one-tenth of a degree shall be shown.

(7) When a final approach fix is specified at the final approach point for ILS, a clear indication shall be given whether it applies to the ILS, the associated ILS localizer only procedure, or both. In the case of MLS, a clear indication shall be given when an FAF has been specified at the final approach point.

(8) If the final approach descent gradient/angle for any type of instrument approach procedure exceeds the maximum value specified in the Procedures for Air Navigation Services — Aircraft Operations (PANS-OPS, Doc 8168), Volume II, a cautionary note shall be included.

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

(i) Aeronautical database requirements:

Appropriate data to support navigation database coding shall be published in accordance with the Procedures for Air Navigation Services — Aircraft Operations (PANS-OPS, Doc 8168), Volume II, Part III, Section 5, Chapter 2, 2.3, for RNAV procedures and Volume II, Part I, Section 4, Chapter 9, 9.4.1.3, for non-RNAV procedures, on the verso of the chart or as a separate, properly referenced sheet.

Subpart N - Visual Approach Chart - ICAO

Chart.580 Function

This chart shall 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.

Chart.585 Availability

The Visual Approach Chart - ICAO shall be made available in the manner prescribed in Chart.020 for all aerodromes used by international civil aviation where:

(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.

Chart.590 Scale

(a) The scale shall be sufficiently large to permit depiction of significant features and indication of the aerodrome layout.

(b) The scale shall not be smaller than 1:500,000.

(c) When an Instrument Approach Chart is available for a given aerodrome, the Visual Approach Chart shall be drawn to the same scale.

Chart.595 Format

The sheet size shall be 210 × 148 mm (8.27 × 5.82 in).

Chart.600 Projection

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

(b) Graduation marks shall be placed at consistent intervals along the neat lines.

Chart.605 Identification

The chart shall be identified by the name of the city or town, which the aerodrome serves, and the name of the aerodrome.

Chart.610 Culture and Topography

(a) Natural and cultural landmarks shall be shown (e.g., bluffs, cliffs, sand dunes, cities, towns, roads, railroads, isolated lighthouses).

(b) Geographical place names shall be included only when they are required to avoid confusion or ambiguity.

(c) Shore lines, lakes, rivers and streams shall be shown.

(d) Relief shall be shown in a manner best suited to the particular elevation and obstacle characteristics of the area covered by the chart.

(e) When shown, spot elevations shall be carefully selected.

(f) The figures relating to different reference levels shall be clearly differentiated in their presentation.

Chart.615 Magnetic Variation

The magnetic variation shall be shown.

Chart.620 Bearings, Tracks and Radials

(a) Bearings, tracks and radials shall be magnetic.

(b) Where bearings, tracks or radials are given with reference to True North or Grid North, this shall be clearly indicated. When Grid North is used, its reference grid meridian shall be identified.

Chart.625 Aeronautical Data

(a) Aerodromes:

(1) All aerodromes shall be shown by the runway pattern. Restrictions on the use of any landing direction shall be indicated. Where there is any risk of confusion between two neighboring aerodromes, this shall be indicated. Abandoned aerodromes shall be identified as abandoned.

(2) The aerodrome elevation shall be shown in a prominent position on the chart.

(b) Obstacles:

(1) Obstacles shall be shown and identified.

(2) The elevation of the top of obstacles shall be shown to the nearest (next higher) meter or foot.

(3) The heights of obstacles above the aerodrome elevation shall be shown.

(4) When the heights of obstacles are shown, the height datum shall be stated in a prominent position on the chart and the heights shall be given in parentheses on the chart.

(c) Prohibited, restricted and danger areas:

Prohibited areas, restricted areas and danger areas shall be depicted with their identification and vertical limits.

(d) Designated airspace:

Where applicable, control zones and aerodrome traffic zones shall be depicted with their vertical limits and the appropriate class of airspace.

(e) Visual approach information:

(1) Visual approach procedures shall be shown where applicable.

(2) Visual aids for navigation shall be shown as appropriate.

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

(f) Visual approach information:

(1) Visual approach procedures shall be shown where applicable.

(2) Visual aids for navigation shall be shown as appropriate.

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

(g) Supplementary information

(1) Radio navigation aids together with their frequencies and identifications shall be shown as appropriate.

(2) Radio communication facilities with their frequencies shall be shown as appropriate.

Subpart O - Aerodrome/Heliport Chart – ICAO

Chart.630 Function

(a) This chart shall provide flight crews with information which will facilitate the ground movement of aircraft:

(1) from the aircraft stand to the runway; and

(2) from the runway to the aircraft stand;

(b) and helicopter movement:

(1) from the helicopter stand to the touchdown and lift-off area and to the final approach and take-off area;

(2) from the final approach and take-off area to the touchdown and lift-off area and to the helicopter stand;

(3) along helicopter ground and air taxiways; and

(4) along air transit routes;

(c) it shall also provide essential operational information at the aerodrome/heliport.

Chart.635 Availability

(a) The Aerodrome/Heliport Chart — ICAO shall be made available in the manner prescribed in Chart.020 for all aerodromes/heliports regularly used by international civil aviation.

(b) The Aerodrome/Heliport Chart — ICAO shall be made available also, in the manner prescribed in Chart.020, for all other aerodromes/heliports available for use by international civil aviation.

Chart.640 Coverage and Scale

(a) The coverage and scale shall be sufficiently large to show clearly all the elements listed in Chart.655 para (a).

(b) A linear scale shall be shown.

Chart.645 Identification

The chart shall be identified by the name of the city or town or area which the aerodrome/heliport serves and the name of the aerodrome/heliport.

Chart.650 Magnetic Variation

True and Magnetic North arrows and magnetic variation to the nearest degree and annual change of the magnetic variation shall be shown.

Chart.655 Aerodrome/Heliport data

(a) This chart shall show:

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

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

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

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

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

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

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

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

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

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

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

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

(13) approach and runway lighting;

(14) location and type of the visual approach slope indicator systems with their nominal approach slope angle(s), minimum eye height(s) over the threshold of the on-slope signal(s), and where the axis of the system is not parallel to the

runway center line, the angle and direction of the displacement, i.e. left or right;

(15) relevant communication facilities listed with their channels and, if applicable, logon address;

(16) obstacles to taxiing;

(17) aircraft servicing areas and buildings of operational significance;

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

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

(b) For aerodromes accommodating airplanes with folding wing tips, the location where the wing tips may be safely extended shall be shown on the chart.

(c) In addition to the items in Chart.885 para (a) relating to heliports, the chart shall show:

(1) heliport type;

(2) touchdown and lift-off area including dimensions to the nearest meter, slope, type of surface and bearing strength in tons;

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

(4) safety area including length, width and type of surface;

(5) helicopter clearway including length and ground profile;

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

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

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

i. take-off distance available;

ii. rejected take-off distance available;

iii. landing distance available.

Subpart P - Aerodrome Ground Movement Chart - ICAO

Chart.660 Function

This supplementary chart shall 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.

Chart.665 Availability

The Aerodrome Ground Movement Chart - ICAO shall be made available in the manner prescribed in Chart.020 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.

Chart.670 Coverage and Scale

(a) The coverage and scale shall be sufficiently large to show clearly all the elements listed in Chart.685.

(b) A linear scale shall be shown.

Chart.675 Identification

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.

Chart.680 Magnetic Variation

(a) A True North arrow shall be shown.

(b) Magnetic variation to the nearest degree and its annual change shall be shown.

Chart.685 Aerodrome Data

(a) This chart shall show in a similar manner all the information on the Aerodrome/Heliport Chart - ICAO relevant to the area depicted, including:

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

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

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

(4) Taxiways with designations, width to the nearest meter, bearing strength or aircraft type restrictions where applicable, lighting, markings (including runway-holding positions and, where established, intermediate holding positions), stop bars, and other visual guidance and control aids;

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

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

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

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

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

(10) Obstacles to taxiing;

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

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

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

(b) For aerodromes accommodating airplanes with folding wing tips, the location where the wing tips may be safely extended shall be shown on the chart.

Subpart Q - Aircraft Parking/Docking Chart, ICAO

Chart.690 Function

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

Chart.695 Availability

The Aircraft Parking/Docking Chart - ICAO shall be made available in the manner prescribed in Chart.020 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.

Chart.700 Coverage and Scale

(a) The coverage and scale shall be sufficiently large to show clearly all the elements listed in Chart.715.

(b) A linear scale shall be shown.

Chart.705 Identification

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.

Chart.710 Magnetic Variation

(a) A True North arrow shall be shown.

(b) Magnetic variation to the nearest degree and its annual change shall be shown.

Chart.715 Aerodrome Data

This chart shall 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 meter 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;

(f) Geographical coordinates in degrees, minutes, seconds and hundredths of seconds for appropriate taxiway center 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.

Subpart R - World Aeronautical Chart, ICAO 1:1,000,000

Chart.720 Function

This chart shall provide information to satisfy the requirements of visual air navigation.

Chart.725 Availability

(a) The World Aeronautical Chart — ICAO 1:1,000,000 shall be made available in the manner prescribed in Chart.020.

(b) To ensure complete coverage of all land areas and adequate continuity in any one coordinated series, the selection of a scale of other than 1: 1,000,000 shall be determined by regional agreement.

Chart.730 Scales

(a) Linear scales for kilometers and nautical miles arranged in the following order:

(1) Kilometers;

(2) nautical miles;

with their zero points in the same vertical line shall be shown in the margin.

(b) The length of the linear scales shall represent at least 200 km (110 NM).

(c) A conversion scale (meters/feet) shall be shown in the margin.

Chart.735 Format

(a) The title and marginal notes shall be in one of the working languages of ICAO.

(b) The information regarding the number of the adjoining sheets and the unit of measurement to express elevations shall be so located as to be clearly visible when the sheet is folded.

(c) The method of folding shall be as follows: Fold the chart on the long axis near the mid-parallel of latitude, face out, with the bottom part of the chart face upward. Fold inward near the meridian, and fold both halves backward in accordion folds.

(d) Overlaps shall be provided by extending the chart area on the top and right side beyond the area given on the index. This overlap area shall contain all aeronautical, topographical, hydrographical and cultural information. The overlap shall 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.

Chart.740 Projection

(a) The projections shall be as follows:

(1) 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;

(2) between 80° and 90° latitude: the Polar stereographic projection with scale matching that of the Lambert conformal conic projection at latitude 80°, except that in the northern hemisphere the Lambert conformal conic projection may be used between 80° and 84° latitude and the Polar stereographic projection between 84° and 90° with the scales matching at 84° North.

(b) Graticules and graduations are shown as follows:

(1) Parallels:

Latitude	Distance between parallels	Graduations 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°)

(2) Meridians

Latitude	Distance between parallels	Graduations on parallels
0° to 52°	30′	1′
52° to 72°	30′	1′
		(only on even numbered meridians)
72° to 84°	1°	1′
84° to 89°	5°	1′
89° to 90°	15°	1′
		(Only on every fourth meridian)

(c) The graduation marks at 1′ and 5′ intervals shall extend away from the Greenwich Meridian and from the Equator. Each 10′ interval shall be shown by a mark on both sides of the graticule line.

(d) 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.

(e) All meridians and parallels shown shall be numbered in the borders of the chart. In addition, each parallel shall be numbered within the body of the chart in such a manner that the parallel can be readily identified when the chart is folded.

(e) The name and basic parameters of the projection shall be indicated in the margin.

Chart.745 Identification

The corresponding International Map of the World (IMW) sheet number may also be shown.

Chart.750 Culture and Topography

(a) Built-up areas:

(1) Cities, towns and villages shall be selected and shown according to their relative importance to visual air navigation.

(2) Cities and towns of sufficient size shall be indicated by the outline of their built-up areas and not of their established city limits.

(b) Railroads:

(1) All railroads having landmark value shall be shown.

(2) Important tunnels shall be shown.

(c) Highways and roads:

(1) Road systems shall be shown in sufficient detail to indicate significant patterns from the air.

(2) Roads shall not be shown in built-up areas unless they can be distinguished from the air as definite landmarks.

(d) Landmarks:

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, shall be shown.

(e) Political boundaries:

International boundaries shall be shown. Un-demarcated and undefined boundaries shall be distinguished by descriptive notes.

(f) Hydrography:

(1) All water features compatible with the scale of the chart comprising shore lines, lakes, rivers and streams (including those non-perennials in nature), salt lakes, glaciers and ice caps shall be shown.

(2) The tint covering large open water areas shall be kept very light.

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

(g) Contours:

(1) Contours shall be shown. The selection of intervals shall be governed by the requirement to depict clearly the relief features required in air navigation.

(2) The values of the contours used shall be shown.

(h) Hypsometric tints:

(1) When hypsometric tints are used, the range of elevations for the tints shall be shown.

(2) The scale of the hypsometric tints used on the chart shall be shown in the margin.

(i) Spot elevations:

(1) Spot elevations shall be shown at selected critical points. The elevations selected shall always be the highest in the immediate vicinity and shall generally indicate the top of a peak, ridge, etc. Elevations in valleys and at lake surface levels which are of special value to the aviator shall be shown. The position of each selected elevation shall be indicated by a dot.

(2) (2) The elevation (in meters or feet) of the highest point on the chart and its geographical position to the nearest five minutes shall be indicated in the margin.

(3) The spot elevation of the highest point in any sheet shall be cleared of hypsometric tinting.

(j) Incomplete or unreliable relief:

(1) Areas that have not been surveyed for contour information shall be labelled “Relief data incomplete”.

(2) Charts on which spot elevations are generally unreliable shall bear a warning note prominently displayed on the face of the chart in the color used for aeronautical information, as follows: “Warning - The reliability of relief information on this chart is doubtful and elevations shall be used with caution.”

(k) Escarpments:

Escarpments shall be shown when they are prominent landmarks or when cultural detail is very sparse.

(l) Wooded areas:

(1) Wooded areas shall be shown.

(2) Where shown, the approximate extreme northern or southern limits of tree growth shall be indicated by a dashed black line and shall be appropriately labelled.

(m) Date of topographic information. The date of latest information shown on the topographic base shall be indicated in the margin.

Chart.755 Magnetic Variation

(a) Isogonic lines shall be shown.

(b) The date of the isogonic information shall be indicated in the margin.

Chart.760 Aeronautical Data

(a) General:

Aeronautical data shown shall be kept to a minimum consistent with the use of the chart for visual navigation and the revision cycle.

(b) Aerodromes:

(1) Land and water aerodromes and heliports shall be 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.

(2) 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, provided they do not cause undesirable clutter on the chart, shall be indicated.

(3) Abandoned aerodromes which are still recognizable as aerodromes from the air shall be shown and identified as abandoned.

(c) Obstacles:

(1) Obstacles shall be shown.

(2) When considered of importance to visual flight, prominent transmission lines, permanent cable car installations and wind turbines, which are obstacles, shall be shown.

(d) Prohibited, restricted and danger areas:

Prohibited (P), restricted (R) and danger (D) areas shall be shown.

(e) Air traffic services system:

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

(2) Where appropriate, the air defense identification zone (ADIZ) shall be shown and properly identified.

(f) Radio navigation aids:

Radio navigation aids shall 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.

(g) Supplementary information:

(1) Aeronautical ground lights together with their characteristics or their identifications or both shall be shown.

(2) Marine lights on outer prominent coastal or isolated features of not less than 28 km (15 NM) visibility range shall be shown:

i. where they are not less distinguishable than more powerful marine lights in the vicinity;

ii. where they are readily distinguishable from other marine or other types of lights in the vicinity of built-up coastal areas;

iii. where they are the only lights of significance available.

Subpart S - Aeronautical chart — ICAO 1:500,000

Reserved.

Subpart T - Aeronautical navigation chart — ICAO small scale

Reserved.

Subpart U - Plotting chart — ICAO

Reserved.

Subpart V - Electronic aeronautical chart display — ICAO

Reserved.

Subpart W - ATC surveillance minimum altitude chart - ICAO

Chart.765 Function

(a) This supplementary chart shall provide 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 shall be prominently displayed on the face of the chart.

Chart.770 Availability

The ATC Surveillance Minimum Altitude Chart — ICAO shall be made available, in the manner prescribed in Chart.020, 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.

Chart.775 Coverage and Scale

(a) The coverage of the chart shall be 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.

Chart.780 Projection

(a) A conformal projection on which a straight line approximates a geodesic line shall be used.

(b) Graduation marks shall be placed at consistent intervals along the neat lines, as appropriate.

Chart.785 Identification

The chart shall be 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.

Chart.790 Culture and Topography

(a) Generalized shorelines of all open water areas, large lakes and rivers shall be shown except where they conflict with data more applicable to the function of the chart.

(b) Appropriate spot elevations and obstacles shall be shown.

Chart.795 Magnetic Variation

The average magnetic variation of the area covered by the chart shall be shown to the nearest degree.

Chart.800 Bearings, Tracks and Radials

(a) Bearings, tracks and radials shall be magnetic.

(b) Where bearings, tracks or radials are given with reference to True North or Grid North, this shall be clearly indicated. When Grid North is used, its reference grid meridian shall be identified.

Chart.805 Aeronautical Data

(a) Aerodromes:

(1) All aerodromes that affect the terminal routings shall be shown. Where appropriate, a runway pattern symbol shall be used.

(2) The elevation of the primary aerodrome to the nearest meter or foot shall be shown.

(b) Prohibited, restricted and danger areas:

Prohibited (P), restricted (R) and danger (D) areas shall be depicted with their identification.

(c) Air traffic services system:

(1) The chart shall show 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;

Note: Routes used in the vectoring of aircraft to and from the significant points may be shown.

iv. transition altitude, where established;

v. information associated with vectoring including:

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

Note: In congested areas, geographical coordinates may be omitted in the interest of legibility.

- 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 centered on the identified aerodrome main VOR radio navigation aid or, if not available, on the aerodrome/heliport reference point;
- notes concerning correction for low temperature effect, as applicable;

vi. communications procedures including call sign(s) and channel(s) of the ATC unit(s) concerned.

(2) A textual description of relevant communication failure procedures shall be provided and should, whenever feasible, be shown on the chart or on the same page that contains the chart.