Republic of the Philippines
CIVIL AVIATION AUTHORITY OF THE PHILIPPINES

MEMORANDUM CIRCULAR NO.: 27-2020

TO : ALL CONCERNED

FROM : DIRECTOR GENERAL

SUBJECT : AMENDMENT TO PHILIPPINE CIVIL AVIATION REGULATIONS - AIR NAVIGATION SERVICES (CAR-ANS) PART 4 INCORPORATING AMENDMENT 61 TO ICAO ANNEX 4 AND OTHER SUPPLEMENTARY AMENDMENT

REFERENCE:

1. Philippine Civil Aviation Regulations- Air Navigation Services Part 4, Issue 4 Amendment No. 5
2. ICAO Annex 4; Amendment 61
3. CAAP Regulations Amendment Procedures
4. Board Resolution No. 2012-054 dated 28 September 2012

Pursuant to the powers vested in me under the Republic Act 9497, otherwise known as the Civil Aviation Authority Act of 2008 and in accordance with the Board Resolution No.: 2012-054 dated 28 September 2012, I hereby approve the incorporation of ICAO Annex 4 Amendment No. 61 and other supplementary amendment to the Philippine Civil Aviation Regulations – Air Navigation Services (CAR-ANS) Part 4.

ORIGINAL REGULATION SUBJECT FOR REVIEW AND REVISION:

CAR-ANS PART 4 Governing AERONAUTICAL CHARTS:

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FOREWORD

This Civil Aviation Regulations-Air Navigation Services Part 4 (CAR-ANS Part 4) was formulated and issued by the Civil Aviation Authority of the Philippines (CAAP), prescribing the Standards and Recommended Practices for Aeronautical Charts ~~provides~~ service providers in order to ensure the production and availability of Aeronautical Charts for the safety, regularity and efficiency of international air navigation.

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4.1 DEFINITIONS

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

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4.1.3 AVAILABILITY

4.1.3.1 *Information.* ~~The Philippines~~ Civil Aviation Authority of the Philippines (CAAP) shall, on request by another ICAO Contracting State, provide all information relating to ~~its own~~

~~territory~~ Manila FIR that is necessary to enable the standards of this ~~Civil Aviation Regulation~~ CAR-ANS to be met.

4.1.3.2 *Charts.* ~~The Philippines~~ CAAP 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.

4.1.3.2.1 For any chart or single sheet of a chart series entirely contained within the ~~Philippine~~ Manila FIR, the ~~Civil Aviation Authority of the Philippines~~ CAAP shall either:

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~~4.1.3.2.2 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 programme of allocation established by the Council of ICAO.~~

~~*Note.— The phrase "regional air navigation agreements" refers to the agreements approved by the Council of ICAO normally on the advice of regional air navigation meetings.*~~

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4.1.3.4 To improve worldwide dissemination of information on new charting techniques and production methods, appropriate charts produced by ~~CAAP shall~~ the Aeronautical Charts providers in the Philippines should be made available without charge to other Contracting States on request on a reciprocal basis.

Note.— Guidance material on the preparation of aeronautical charts, including sample formats, is contained in the Aeronautical Chart Manual *(ICAO Doc 8697).*

4.2 GENERAL SPECIFICATIONS

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4.2.1 Operational Requirements for Charts

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4.2.1.1 Each type of chart shall provide information relevant to the function of the chart and its design shall observe Human Factor principles which facilitate its optimum use.

Note — Human Factors Principles can be found in the Human Factors Training manual (~~(~~ICAO Doc 9683~~)~~).

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

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4.2.3 Miscellaneous Information

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

1) designation of the chart or title of chart series;

Note. – The title may be abbreviated.

2) name and reference of the sheet;

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

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4.2.4 Symbols

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4.2.4.4 CAAP regulatory body shall ensure that as of 18 November 2010, symbols are shown in the manner specified in 4.2.4.2, 4.2.4.3 and ~~CAR-ANS Part 4~~ Appendix 2 — ICAO Chart Symbols, symbol number 121.

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4.2.5 Units of Measurement

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4.2.5.7 Conversion Scales (Kilometers/Nautical miles, meters/feet) shall be provided on each chart on which distances, elevation, altitudes and heights are shown. The conversion ~~of each~~ scale shall be placed on the face of ~~the~~ each chart.

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4.2.8 Spelling of geographical names

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

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4.2.9 Abbreviations

4.2.9.1 Abbreviations shall be used on aeronautical charts whenever they are appropriate.

Note - Abbreviations should be selected from the Procedures for Air Navigation Services--- ICAO Abbreviations and Codes (~~(~~ICAO *Doc 8400*~~)~~).

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4.2.11 Colors

4.2.11.1 Colors used on charts ~~shall~~ should conform to Appendix 3 - Color guide of this CAR-ANS.

4.2.12 Relief

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4.2.12.2 Where relief is shown by hypsometric tints, the tints ~~shall~~ should be based on those shown in the Hypsometric Tint Guide in Appendix 4 of this CAR-ANS.

4.2.12.3 Where spot elevations are used they shall be shown for selected critical points.

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4.2.14 Air traffic services airspaces

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4.2.14.2 On charts used for visual flight, those parts of the ATS Airspace Classification table published in ~~the Philippine Aeronautical Information Publication~~ Appendix 11.4 of CAR-ANS Part 11 applicable to the airspace depicted on the chart, should be in the face or reverse of each chart.

4.2.15 Magnetic variation

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4.2.15.3 For instrument procedure charts, the publication of a magnetic variation change ~~shall~~ should be completed within a maximum of six AIRAC cycles.

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

4.2.16 Typography

Note —Samples of type suitable for use on aeronautical charts are included in Aeronautical Charts Manual (ICAO Doc 8697).

4.2.17 Aeronautical data

4.2.17.1 ~~CAAP or aeronautical chart producing company~~ Aeronautical Charts service providers shall take all necessary measures to introduce a properly organized quality system containing procedures, processes and resources necessary to implement quality management at each function stage as outlined in CAR-ANS Part 15, 15.3.6. The execution of such quality management shall be made demonstrable for each function stage when required. In addition, CAAP or aeronautical chart producing company shall ensure that established procedures exist in order that aeronautical data at any moment are traceable to its origin so to allow any data anomalies or error, detected during the production/maintenance phases or in the operational use, be corrected.

Note — Specifications governing the quality system are given in CAR-ANS Part 15, 15.3.2.

4.2.17.2 CAAP regulatory body shall ensure that the chart resolution of aeronautical data shall be that as specified for a particular chart.

Note. — Specifications concerning the chart resolution for aeronautical data are contained in ~~PANS-AIM (Doc 10066),~~ Manual of Standards for Aeronautical Information Service (MOS AIS), Appendix 1.

4.2.17.3 CAAP regulatory body shall ensure that integrity of aeronautical data is maintained throughout the data process from origination to distribution to the next intended user.

Note. — Specifications concerning the integrity classification related to aeronautical data are provided in ~~PANS-AIM (Doc 10066),~~ MOS-AIS, Appendix 1.

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

Note.— Detailed specifications concerning digital data error detection techniques are contained in ~~PANS-AIM (Doc 10066).~~ MOS-AIS.

4.2.18 Common reference system

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4.2.18.1.1 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 (~~[~~ICAO Doc 9674~~]~~).

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4.2.18.1.3 The chart resolution of geographical coordinates shall be that specified for a particular chart series.

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Note 2 — Specifications concerning the accuracy and integrity classification of WGS-84 related aeronautical data are contained in ~~PANS-AIM (Doc 10066),~~ MOS-AIS, Appendix 1.

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4.2.18.2.2 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.

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Note 2.— Specifications concerning the accuracy and integrity classification of elevation and geoid undulation at specific positions at aerodromes/heliports are contained in ~~PANS-AIM (Doc 10066),~~ MOS-AIS, Appendix 1.

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

Note.— Specifications concerning the chart resolution of elevation and geoid undulation are contained in ~~PANS-AIM (Doc 10066),~~ MOS-AIS, Appendix 1.

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4.3 AERODROME OBSTACLE CHART — ICAO TYPE A (OPERATING LIMITATIONS)

4.3.1 Function

This chart, in combination with the Aerodrome Obstacle Chart — ICAO Type C or with the relevant information published in the 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.~~ Philippine Civil Aviation Regulations (PCAR) Part 8 – Operations, Chapters 8.7 and 8.8.

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4.3.4 Coverage and scale

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4.3.4.3 The vertical scale ~~shall~~ should be ten times the horizontal scale.

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4.3.5 Format

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

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4.3.8 Aeronautical data

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4.3.8.4.1.1 The nature of the runway and stopway surfaces ~~shall~~ should be indicated.

4.3.8.4.1.2 Stopways ~~shall~~ should be identified as such and shall be shown by a broken line.

4.3.9 Accuracy

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4.3.9.2 The horizontal dimensions and the elevations of the runway, stopway and clearway to be printed on the chart ~~shall~~ should be determined to the nearest 0.5 m (1 ft).

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

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4.4 AERODROME OBSTACLE CHART — ICAO TYPE B

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4.4.2 Availability

4.4.2.1 Aerodrome Obstacle Charts — ICAO Type B ~~shall~~ should be made available, in the manner prescribed in 4.1.3.2, for all aerodromes regularly used by international civil aviation.

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4.4.9 Aeronautical data

…

4.4.9.1.1 The nature of the runway and stopway surfaces ~~shall~~ should be given.

4.4.9.1.2 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~~ should be indicated in a prominent manner.

4.4.9.1.3 The extent of tree areas and relief features, part of which constitute obstacles, ~~shall~~ should be shown.

…

4.4.10 Accuracy

…

4.4.10.2 The horizontal dimensions and the elevations of the movement area, stopways and clearways to be printed on the chart ~~shall~~ should be determined to the nearest 0.5 m (1 ft).

4.4.10.3 The order or accuracy of the field work and the precision of chart production ~~shall~~ should be such that the resulting data will be within the maximum deviations indicated herein:

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4.5 AERODROME TERRAIN AND OBSTACLE CHART — ICAO (ELECTRONIC)

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4.5.5 Chart content

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4.5.5.2.2 The terrain feature shall be portrayed in a manner that provides an effective general impression of a terrain. This shall be a representation of terrain surface by continuous elevation values at all intersections of the defined grid, also known as the Digital Elevation Model (DEM).

Note.— In accordance with CAR-ANS Part 15, 15.5 and ~~PANS-AIM (Doc 10066),~~ MOS-AIS, Chapter 5 and Appendices 1 and 8, the DEM for Area 2 post spacing (grid) is specified at 1 arc second (approximately 30 m).

4.5.5.2.3 Representation of terrain surface ~~shall~~ should be provided as a selectable layer of contour lines in addition to the DEM.

4.5.5.2.4 An ortho-rectified image which matches the features on the DEM with features on the overlying image ~~shall~~ should be used to enhance the DEM. The image should be provided as a separate selectable layer.

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4.5.5.2.6 Additional terrain attributes provided in the database(s) ~~shall~~ should be linked to the portrayed terrain feature.

Note — Specifications concerning terrain attributes are contained in ~~PANS-AIM (Doc 10066),~~ MOS-AIS, Appendix 6, Table A6-1.

4.5.5.3 Obstacle features

4.5.5.3.1 Obstacle features, and associated attributes, portrayed or database-linked to the chart shall be based on obstacle data sets which satisfy the requirements of CAR-ANS Part 15, 15.5.

Note — Specifications concerning obstacle data sets are contained in ~~PANS-AIM (Doc 10066)~~ MOS-AIS, Chapter 5 and Appendices 1, 6 and 8.

…

4.5.5.3.4 Additional obstacle attributes provided in the database(s) ~~shall~~ should be linked to the portrayed obstacle feature.

Note.— Specifications concerning obstacle attributes are contained in ~~PANS-AIM (Doc 10066),~~ MOS-AIS, Appendix 6, Table A6-2.

4.5.5.4 Aerodrome features

4.5.5.4.1 Aerodrome features, and associated attributes, portrayed and database-linked to the chart shall be based on aerodrome data which satisfy the requirements of CAR-ANS Part 15, 15.5.

Note.— Specifications concerning aerodrome features and associated attributes are contained in ~~PANS-AIM (Doc 10066),~~ MOS-AIS, Chapter 5 and Appendix 1.

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4.5.6 Accuracy and resolution

4.5.6.1 The order of accuracy of aeronautical, terrain and obstacle data shall be in accordance with its intended use.

Note.— Specifications concerning the accuracy of aeronautical, terrain and obstacle data are contained in the ~~PANS-AIM (Doc 10066),~~ MOS-AIS, Appendix 1.

4.5.6.2 The aeronautical, terrain and obstacle data resolution shall be commensurate with the actual data accuracy.

Note.— Specifications concerning the order of resolution for aeronautical, terrain and obstacle data are provided in the ~~PANS-AIM (Doc 10066),~~ MOS-AIS, Appendix 1.

4.5.7 Electronic functionality

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4.5.7.4 The chart ~~shall~~ should include its own “reader” software.

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4.6 PRECISION APPROACH TERRAIN CHART — ICAO

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4.6.3 Scale

4.6.3.1 The horizontal scale ~~shall~~ should be 1:2,500, and the vertical scale 1:500.

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

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4.6.5 Plan and profile information

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4.6.5.2 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~~ should be shown to a distance not exceeding 2 000 m (6 500 ft) from the runway threshold.

4.6.5.3 The ILS reference datum height ~~shall~~ should be shown to the nearest half meter or foot.

4.7 ENROUTE CHART — ICAO

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4.7.3 Coverage and Scale

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4.7.3.1 Layout of sheet lines ~~shall~~ should be determined by the density and pattern of the ATS route structure.

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4.7.4 Projection

4.7.4.1 A conformal projection on which a straight line approximates a great circle ~~shall~~ should be used.

…

4.7.6 Culture and topography

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4.7.6.2 Within each quadrilateral formed by the parallels and meridians the area minimum altitude shall be shown, except as provided for in 4.7.6.3.

Note 1.— Quadrilaterals formed by the parallels and meridians normally correspond to the whole degree of latitude and longitude. Regardless of the chart scale being used, the area minimum altitude relates to the consequent quadrilateral.

Note 2. — Refer to the Procedures for Air Navigation — Aircraft Operations *(PANS-OPS, ICAO Doc 8168), Volume II, Part I, Section 2, Chapter 1, paragraph 1.8 for method for determination of area minimum altitude.*

~~4.7.6.3 In areas of high latitude where it is determined by the appropriate authority that True North orientation of the chart is impractical, the area minimum altitude shall be shown within each quadrilateral formed by reference lines of the graticule (grid) used.~~

~~4.7.6.4 Where charts are not True North orientated, this fact and the selected orientation used shall be clearly indicated.~~

4.7.7 Magnetic variation

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

4.7.8 Bearings, tracks and radials

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~~4.7.8.2 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.~~

…

4.7.9 Aeronautical data

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4.7.9.3.1.1 The components shall include the following:

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4) 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;

Note.— Guidance material on the organization of ATS routes for en-route flight publication which may be used to facilitate charting is contained in the Aeronautical Information Services Manual *(ICAO Doc 8126).*

…

4.8 AREA CHART — ICAO

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4.8.4 Projection

4.8.4.1 A conformal projection on which a straight line approximates a great circle ~~shall~~ should be used.

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4.8.6 Culture and topography

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4.8.6.2 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~~ should 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~~ should be shown printed in black. Obstacles ~~shall~~ should also be shown.

…

4.8.8 Bearings, tracks and radials

…

~~4.8.8.2 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.~~

4.8.9 Aeronautical data

…

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

…

Note 2.— Refer to the Procedures for Air Navigation — Aircraft Operations (PANS-OPS, ICAO Doc 8168), Volume II, Part I, Section 2, Chapter 1, paragraph 1.8 for method for determination of area minimum altitude.

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4.9 STANDARD DEPARTURE CHART – INSTRUMENT (SID) – ICAO

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4.9.3 Coverage and Scale

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4.9.3.2 The chart ~~may~~ should be drawn to scale.

…

4.9.4 Projection

4.9.4.1 A conformal projection on which a straight line approximates a great circle ~~shall~~ should be used.

4.9.4.2 When the chart is drawn to scale, parallels and meridians ~~shall~~ should be shown at suitable intervals.

…

4.9.6 Culture and topography

…

4.9.6.2 To improve situational awareness in areas where significant relief exists, the chart ~~shall~~ should 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.

…

4.9.8 Bearings, tracks and radials

…

~~4.9.8.2 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 should be identified.~~

…

4.9.9 Aeronautical Data

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4.9.9.4 Air traffic services system

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4.9.9.4.1.1 The component shall comprise the following:

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

a) when the radio navigation aid is used for conventional navigation:
   ~~a~~i) plain language name;
   ~~b~~ii) identification;
   iii) Morse code;
   ~~c~~iv) frequency;
   ~~d~~v) geographical coordinates in degrees, minutes and seconds; and
   ~~e~~vi) for DME, the channel and the elevation of the transmitting antenna of the DME to the nearest 30 m (100 ft);
b) when the radio navigation aid is used as a significant point for area navigation:

i) plain language name; and
ii) identification;

~~3) the name-codes of the significant points not marked by the position of a radio navigation aid, their geographical coordinates in degrees, minutes and seconds and the bearing to the nearest tenth of a degree and distance to the nearest two-tenths of a kilometer (tenth of a nautical mile) from the reference radio navigation aid.~~

3) significant points not marked by the position of a radio navigation aid including:

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

4) applicable holding patterns;

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

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

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4.10 STANDARD ARRIVAL CHART – INSTRUMENT (STAR) – ICAO

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4.10.3 Coverage and Scale

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4.10.3.2 The chart ~~shall~~ should be drawn to scale.

…

4.10.4 Projection

4.10.4.1 A conformal projection on which a straight line approximates a great circle ~~shall~~ should be used.

4.10.4.2 When the chart is drawn to scale, parallels and meridians ~~shall~~ should be shown at suitable intervals.

…

4.10.6 Culture and topography

…

4.10.6.2 To improve situational awareness in areas where significant relief exists, the chart ~~shall~~ should 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.

…

4.10.8 Bearings, tracks and radials

…

~~4.10.8.2 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.~~

…

4.10.9 Aeronautical data

…

4.10.9.4 Air traffic services system

…

4.10.9.4.1.1 The components shall comprise the following:

…

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

a) when the radio navigation aid is used for conventional navigation:
~~a~~i) plain language name;
~~b~~ii) identification;
iii) Morse code;
~~c~~iv) frequency;
~~d~~v) geographical coordinates in degrees, minutes and seconds; and
~~e~~vi) for DME, the channel and the elevation of the transmitting antenna of the DME to the nearest 30 m (100 ft);

b) when the radio navigation aid is used as a significant point for area navigation:
i) plain language name; and
ii) identification;

~~3) the name-codes of the significant points not marked by the position of a radio navigation aid, their geographical coordinates in degrees, minutes and seconds and the bearing to the nearest tenth of a degree and distance to the nearest two-tenths of a kilometer (tenth of a nautical mile) from the reference radio navigation aid.~~

3) significant points not marked by the position of a radio navigation aid including:

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

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

4) applicable holding patterns;

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

6) area speed restrictions, where established;

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4.11 INSTRUMENT APPROACH CHART – ICAO

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4.11.3 Coverage and Scale

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4.11.3.~~4~~.3.1 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.

4.11.3.~~5~~3.2 A distance scale ~~shall~~ should be shown directly below the profile.

4.11.4 Format

4.11.4.1 The sheet size ~~may be 210 x 148 mm (8.27 x 5.82 in).~~ should be 210 x 297 mm (8.27 x 11.69 in).

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4.11.7 Culture and topography

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4.11.7.3 In areas where relief is lower than specified in 4.11.7.2, all relief exceeding 150 m (500 ft) above the aerodrome elevation ~~shall~~ should 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~~ should also be shown printed in black.

…

4.11.9 Bearings, tracks and radials

…

~~4.11.9.2 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.~~

4.11.10 Aeronautical Data

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4.11.10.2 Obstacles

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4.11.10.2.2 If one or more obstacles are the determining factor of an obstacle clearance altitude/ height, those obstacles ~~shall~~ should be identified.

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4.11.10.2.4 The heights of obstacles above a datum other than mean sea level (see 4.11.10.2.3) ~~shall~~ should be shown. When shown, they ~~shall~~ should be given in parentheses on the chart.

…

~~4.11.10.2.8 Obstacles that penetrate the visual segment surface shall be identified on the chart.~~

~~*Note. — Guidance on the charting of VSS penetrations can be found in the* Aeronautical Chart Manual *(Doc 8697).*~~

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4.11.10.4 Radio communication facilities and navigation aids

…

4.11.10.4.1.1 When a radio navigation aid is used as a significant point for area navigation, only its plain language name and identification shall be shown.

…

4.11.10.4.3 ~~The~~ When the final approach fix is used for conventional navigation (or final approach point for an ILS approach procedure), it ~~may~~ should be identified with its distance (in nautical miles) from the DME.

…

4.11.10.6.2 The plan view ~~shall~~ should show the distance to the aerodrome from each radio navigation aid concerned with the final approach.

…

4.11.10.6.4 Heights required by procedures ~~shall~~ should be shown in parentheses, using the height datum selected in accordance with 4.11.10.2.5.

4.11.10.6.5 The profile view ~~shall~~ should include a ground profile or a minimum altitude/height portrayal as follows:

…

4.11.10.7.1 ~~Aerodrome operating minima when established by the State~~ The established aerodrome operating minima shall be shown.

…

4.11.10.8.3 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~~ should be included.

…

4.11.10.8 Supplementary Information

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4.11.10.8.8 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, ICAO Doc 8168), Volume II, a cautionary note shall be included.

4.11.10.8.9 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.

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4.12 VISUAL APPROACH CHART — ICAO

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4.12.3 Scale

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4.12.3.2 The scale ~~may~~ should not be smaller than 1:500,000.

Note - A scale of 1:250,000 or 1:200,000 is preferred.

4.12.3.3 When an Instrument Approach Chart is available for a given aerodrome, the Visual Approach Chart ~~shall~~ should be drawn to the same scale.

4.12.4 Format

The sheet size ~~shall~~ should be 210 x 297 mm (8.27 x 11.69 in).

…

4.12.7 Culture and topography

…

4.12.7.1.1 Geographical place names ~~shall~~ should be included only when they are required to avoid confusion or ambiguity.

…

4.12.7.4 When shown, spot elevations ~~shall~~ should be carefully selected.

Note.— The value of certain spot elevations/heights in relation to both mean sea level and aerodrome elevation may be given.

…

4.12.9 Bearings, tracks and radials

…

~~4.12.9.2 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.~~

4.12.10 Aeronautical data

…

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

…

4.13 AERODROME/HELIPORT CHART – ICAO

…

4.13.2 Availability

4.13.2.1 The Aerodrome/Heliport Chart — ICAO shall be made available in the manner prescribed in 4.1.3.2 for all aerodromes/heliports regularly used by international civil aviation.

Note.— Under certain conditions an Aerodrome Ground Movement Chart — ICAO and an Aircraft Parking/Docking Chart — ICAO may have to be provided (see Chapters 4.14 and 4.15); in which case, the elements portrayed on these supplementary charts need not be duplicated on the Aerodrome/ Heliport Chart — ICAO.

~~4.13.2.2 The Aerodrome/Heliport Chart — ICAO shall be made available also, in the manner prescribed in 4.1.3.2, for all other aerodromes/heliports available for use by international civil aviation.~~

~~*Note.— Under certain conditions an Aerodrome Ground Movement Chart — ICAO and an Aircraft Parking/Docking Chart — ICAO may have to be provided (see Chapters 4.14 and 4.15); in which case, the elements portrayed on these supplementary charts need not be duplicated on the Aerodrome/ Heliport Chart — ICAO.*~~

…

4.13.6 Aerodrome/heliport data

…

4.13.6.2 For aerodromes accommodating aeroplanes with folding wing tips, the location where the wing tips may be safely extended should be shown on the chart.

…

~~4.13.6.2~~ 4.13.6.3 In addition to the items in 4.13.6.1 relating to heliports, the chart shall show:

…

4.14 AERODROME GROUND MOVEMENT CHART – ICAO

…

4.14.2 Availability

4.14.2.1 The Aerodrome Ground Movement Chart — ICAO ~~shall~~ should be made available in the manner prescribed in 4.1.3.2 where, due to congestion of information, details necessary for the ground movement of aircraft along the taxiways to and from the aircraft stands cannot be shown with sufficient clarity on the Aerodrome/Heliport Chart — ICAO.

4.14.3 Coverage and Scale

…

4.14.3.2 A linear scale ~~shall~~ should be shown.

…

4.14.5 Magnetic variation

…

4.14.5.2 Magnetic variation to the nearest degree and its annual change ~~shall~~ should be shown.

Note.— This chart need not be True North orientated.

…

4.14.6 Aerodrome data

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

…

4.14.6.2 For aerodromes accommodating aeroplanes with folding wing tips, the location where the wing tips may be safely extended should be shown on the chart.

…

4.15 AIRCRAFT PARKING/DOCKING CHART — ICAO

…

4.15.2 Availability

4.15.2.1 The Aircraft Parking/ Docking Chart — ICAO ~~shall~~ should be made available in the manner prescribed in 4.1.3.2 where, due to the complexity of the terminal facilities, the information cannot be shown with sufficient clarity on the Aerodrome/Heliport Chart — ICAO or on the Aerodrome Ground Movement Chart — ICAO.

4.15.3 Coverage and Scale

…

4.15.3.2 A linear scale ~~shall~~ should be shown.

…

4.15.5 Magnetic variation

…

4.15.5.2 Magnetic variation to the nearest degree and its annual change ~~shall~~ should be shown.

Note.— This chart need not be True North orientated.

…

4.16 WORLD AERONAUTICAL CHART — ICAO 1:1 000 000

…

4.16.2

…

4.16.2.2 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 ~~may~~ should be determined by regional agreement.

4.16.3 Scale

…

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

…

4.16.4 Format

4.16.4.1 The title and marginal notes shall be in ~~one of the ICAO working languages~~ English language.

~~*Note.— The language of the publishing country may be used in addition to the ICAO working language.*~~

…

4.16.4.3 The method of folding ~~shall~~ should be as follows:

…

4.16.4.4 Whenever practicable, the sheet lines ~~shall~~ should conform with those shown in the index in Appendix 5.

…

4.16.4.5 Overlaps ~~may~~ should 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~~ should 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.

4.16.5 Projection

…

4.16.5.3.1 The length of the graduation marks ~~shall~~ should 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.

…

4.16.7 Culture and topography

…

4.16.7.1.2 Cities and towns of sufficient size ~~shall~~ should be indicated by the outline of their built-up areas and not of their established city limits.

…

4.16.7.2.2 Important tunnels ~~shall~~ should be shown.

Note.— A descriptive note may be added.

…

4.16.7.3.2 Roads ~~shall~~ should not be shown in built-up areas unless they can be distinguished from the air as definite landmarks.

Note.— The numbers or names of important highways may be shown.

4.16.7.4 Landmarks

4.16.7.4.1 Natural and cultural landmarks, such as bridges, prominent transmission lines, permanent cable car installations, wind turbines, mine structures, forts, ruins, levees, pipelines, and rocks, bluffs, cliffs, sand dunes, isolated lighthouses, lightships, etc., when considered to be of importance for visual air navigation, ~~shall~~ should be shown.

…

4.16.7.6.2 The tint covering large open water areas ~~shall~~ should be kept very light.

Note.— A narrow band of darker tone may be used along the shore line to emphasize this feature.

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

Note.— Groups of rocks may be shown by a few representative rock symbols within the area.

…

4.16.7.9.3 The spot elevation of the highest point in any sheet ~~shall~~ should be cleared of hypsometric tinting.

…

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

4.16.7.12 Wooded areas

4.16.7.12.1 Wooded areas ~~shall~~ should be shown.

Note.— On high latitude charts, the approximate extreme northern or southern limits of tree growth may be shown.

…

4.17 AERONAUTICAL CHART — ICAO 1:500 000

…

4.17.2 Availability

4.17.2.1 The Aeronautical Chart — ICAO 1:500 000 ~~shall~~ should be made available in the manner prescribed in 4.1.3.2 for all areas delineated in Appendix 5.

…

4.17.3 Scales

…

4.17.3.1.1 The length of the linear scale ~~shall~~ should be not less than 200 mm (8 in).

…

4.17.4 Format

…

4.17.4.3 The method of folding ~~shall~~ should be as follows:

…

4.17.4.4 Whenever practicable, sheets ~~shall~~ should be quarter sheets of the World Aeronautical Chart — ICAO 1:1 000 000. An appropriate index to adjacent sheets, showing the relationship between the two chart series shall be included on the face of the chart or on the reverse side.

Note.— Sheet lines may be varied to satisfy particular requirements.

4.17.4.5 Overlaps ~~shall~~ should be provided by extending the chart area on the top and right side beyond the area given on the index. This overlap area ~~shall~~ should contain all aeronautical, topographical, hydrographical and cultural information. The overlap ~~shall~~ should extend up to 15 km (8 NM), if possible, but in any case from the limiting parallels and meridians of each chart to the neat line.

4.17.5 Projection

…

4.17.5.2 The projection of the World Aeronautical Chart — ICAO 1:1 000 000 ~~shall~~ should be used.

…

4.17.5.4.1 The length of the graduation marks ~~shall~~ should 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 9).08 in) extending on both sides of the graticule line for the 10’ intervals.

…

4.17.5.5.1 Each meridian and parallel ~~shall~~ should be numbered within the body of the chart whenever this data is required operationally.

…

4.17.6 Identification

…

4.17.6.1.1 Where applicable, sheets ~~shall~~ should also be identified by the reference number of the corresponding World Aeronautical Chart — ICAO 1:1 000 000, with the addition of one or more of the following letter suffixes indicating the quadrant or quadrants:

…

4.17.7 Culture and topography

…

4.17.7.1.2 Cities and towns of sufficient size ~~shall~~ should be ~~shown~~ indicated by the outline of their built-up areas and not of their established city limits.

…

4.17.7.3.2 Roads ~~shall~~ should not be shown in built-up areas unless they can be distinguished from the air as definite landmarks.

Note.— The numbers or names of important highways may be shown.

4.17.7.4 Landmarks

4.17.7.4.1 Natural and cultural landmarks, such as bridges, prominent transmission lines, permanent cable car installations, wind turbines, mine structures, lookout towers, forts, ruins, levees, pipelines, rocks, bluffs, cliffs, sand dunes, isolated lighthouses and lightships, when considered to be of importance for visual air navigation, ~~may~~ should be shown.

…

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

4.17.7.6.2 The tint covering large open water areas ~~shall~~ should be kept very light.

Note.— A narrow band of darker tone may be used along the shore line to emphasize this feature.

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

…

4.17.7.9.3 The spot elevation of the highest point on any sheet ~~shall~~ should be cleared of hypsometric tinting.

…

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

…

4.17.7.12.1 Wooded areas ~~shall~~ should be shown.

Note.— On high latitude charts the approximate extreme northern or southern limits of tree growth may be shown.

…

4.18 AERONAUTICAL NAVIGATION CHART — ICAO SMALL SCALE

…

4.18.2 Availability

4.18.2.1 The Aeronautical Navigation Chart — ICAO Small Scale ~~shall~~ should be made available in the manner prescribed in 4.1.3.2 for all areas delineated in Appendix 5.

Note.— The selection of this scale as an alternative to the World Aeronautical Chart — ICAO 1:1 000 000 is covered by 4.16.2.1 and 4.16.2.2.

4.18.3 Coverage and scale

4.18.3.1 The Aeronautical Navigation Chart — ICAO Small Scale ~~shall~~ should provide, as a minimum, complete coverage of the major land masses of the world.

Note 1.— A sheet layout for this series is contained in the Aeronautical Chart Manual *(ICAO Doc 8697).*

…

4.18.3.5 The length of the linear scale ~~shall~~ should be not less than 200 mm (8 in).

…

4.18.6 Culture and topography

…

4.18.6.1.2 Cities and towns of sufficient size ~~shall~~ should be indicated by the outline of their built-up areas and not of their established city limits.

…

4.18.6.2.2 Important tunnels ~~shall~~ should be shown.

Note.— A descriptive note may be added.

…

4.18.6.3.2 Roads ~~shall~~ should not be shown in built-up areas unless they can be distinguished from the air as definite landmarks.

4.18.6.4 Landmarks

Natural and cultural landmarks, such as bridges, prominent transmission lines, permanent cable car installations, mine structures, forts, ruins, levees, pipelines and rocks, bluffs, cliffs, sand dunes, isolated lighthouses and lightships, when considered to be of importance for visual air navigation, ~~shall~~ should be shown.

Note.— Descriptive notes may be added.

…

4.18.6.6.2 The tint covering large open water areas ~~shall~~ should be kept very light.

Note.— A narrow band of darker tone may be used along the shore line to emphasize this feature.

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

…

4.18.6.9.3 The spot elevation of the highest point in any sheet ~~shall~~ should be cleared of hypsometric tinting.

…

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

4.18.6.12 Wooded areas

4.18.6.12.1 Wooded areas of large extent ~~shall~~ should be shown.

…

4.18.6.14.1 Subdued colors ~~shall~~ should be used for the chart background to facilitate plotting.

4.18.6.14.2 Good color contrast ~~shall~~ should be ensured to emphasize features important to visual air navigation.

…

4.18.8 Aeronautical data

…

4.18.8.3.1 Prohibited, restricted and danger areas ~~shall~~ should be shown when considered to be of importance to air navigation.

4.18.8.4 Air traffic services system

4.18.8.4.1 Significant elements of the air traffic services system ~~shall~~ should be shown when considered to be of importance to air navigation.

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

Note.— ADIZ procedures may be described in the chart legend.

…

4.19 PLOTTING CHART — ICAO

…

4.19.2 Availability

4.19.2.1 This chart ~~shall~~ should be made available, in the manner prescribed in 4.1.3.2, to cover major air routes over oceanic areas and sparsely settled areas used by international civil aviation.

Note.— In areas where the Enroute Chart — ICAO is provided there may be no requirement for a plotting chart.

4.19.3 Coverage and scale

4.19.3.1 Where practicable, the chart for a particular region ~~shall~~ should cover major air routes and their terminals on a single sheet.

4.19.3.2 The scale ~~shall~~ should be governed by the area to be covered.

Note.— Normally, the scale will range from 1:3 000 000 to 1:7 500 000.

4.19.4 Format

4.19.4.1 The sheet ~~shall~~ should be of a size that can be adapted for use on a navigator's plotting table.

4.19.5 Projection

4.19.5.1 A conformal projection on which a straight line approximates a great circle ~~shall~~ should be used.

…

4.19.5.2.1 The intervals ~~shall~~ should be arranged to permit accurate plotting to be carried out with a minimum of time and effort.

…

4.19.5.2.3 Parallels and meridians ~~shall~~ should be numbered so that a number appears at least once every 15 cm (6 in) on the face of the chart.

…

4.19.7 Culture and topography

…

4.19.7.3 Particularly hazardous or prominent relief features ~~shall~~ should be emphasized.

Note.— Large cities and towns may be shown.

…

4.19.9 Aeronautical data

…

4.19.9.2 Aeronautical ground lights and marine lights useful for air navigation ~~shall~~ should be shown where other means of navigation are non-existent.

…

4.21 ATC SURVEILLANCE MINIMUM ALTITUDE CHART — ICAO

…

4.21.2 Availability

4.21.2.1 The ATC Surveillance Minimum Altitude Chart — ICAO ~~shall~~ should be made available, in the manner prescribed in 4.1.3.2, where radar vectoring procedures are established and radar minimum altitudes cannot be shown adequately on the Area Chart — ICAO, Standard

Departure Chart — Instrument (SID) — ICAO or Standard Arrival Chart — Instrument (STAR) — ICAO.

4.21.3 Coverage and scale

…

4.21.3.3 The chart ~~shall~~ should be drawn to the same scale as the associated Area Chart — ICAO.

4.21.4 Projection

4.2.1.4.1 A conformal projection on which a straight line approximates a geodesic line ~~shall~~ should be used.

4.2.1.4.2 Graduation marks ~~shall~~ should be placed at consistent intervals along the neat lines, as appropriate.

…

4.21.8 Bearings, tracks and radials

…

~~4.21.8.2 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.~~

4.21.9 Aeronautical data

…

4.21.9.3.2 A textual description of communication failure procedures in relation to radar control ~~shall~~ should be provided and ~~shall~~ should, whenever feasible, be shown on the chart or on the same page that contains the chart.

…

4.24 DISTRIBUTION

This Civil Aviation Regulations-Air Navigation Services Part 4 (CAR-ANS Part 4) ~~will~~ shall be distributed to ~~all~~ air traffic services facilities~~,~~ involved in the flight procedures design, publication of aeronautical charts, and those ~~involved~~ engaged in flight operations.

…

APPENDIX 2. ICAO CHART SYMBOLS

…

AIR TRAFFIC SERVICES

…

125	~~Altitudes~~ Procedure altitudes/flight levels	Altitude/flight level “window”	17 000 10 000	FL 220 10 000
		“At or above” altitude/flight level	7000	FL 070
		“At or below” altitude/flight level	5 000	FL 050
		~~“Mandatory”~~ “At” altitude/flight level	3 000	FL 030
		“Recommended” ~~procedure~~ altitude/flight level	5 000	FL 050

		"Expected" altitude/flight level	Expect 5 000 Expect FL 050
	~~*Note.— For use only on SID and STAR charts. Not intended for depiction of minimum obstacle clearance altitude.*~~		

— END—

NEW/AMENDED REGULATION AFTER REVISION:

CAR-ANS PART 4 Governing AERONAUTICAL CHARTS:

…

FOREWORD

This Civil Aviation Regulations-Air Navigation Services Part 4 (CAR-ANS Part 4) was formulated and issued by the Civil Aviation Authority of the Philippines (CAAP), prescribing the Standards and Recommended Practices for Aeronautical Charts service providers in order to ensure the production and availability of Aeronautical Charts for the safety, regularity and efficiency of international air navigation.

…

4.1 DEFINITIONS

…

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

…

4.1.3 AVAILABILITY

4.1.3.1 *Information.* Civil Aviation Authority of the Philippines (CAAP) shall, on request by another ICAO Contracting State, provide all information relating to Manila FIR that is necessary to enable the standards of this CAR-ANS to be met.

4.1.3.2 *Charts.* CAAP 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.

4.1.3.2.1 For any chart or single sheet of a chart series entirely contained within the Manila FIR, the CAAP shall either:

…

4.1.3.4 To improve worldwide dissemination of information on new charting techniques and production methods, appropriate charts produced by the Aeronautical Charts providers in the Philippines should be made available without charge to other Contracting States on request on a reciprocal basis.

Note.— Guidance material on the preparation of aeronautical charts, including sample formats, is contained in the Aeronautical Chart Manual *(ICAO Doc 8697).*

4.2 GENERAL SPECIFICATIONS

…

4.2.1 Operational Requirements for Charts

…

4.2.1.1 Each type of chart shall provide information relevant to the function of the chart and its design shall observe Human Factor principles which facilitate its optimum use.

Note — Human Factors Principles can be found in the Human Factors Training manual (ICAO Doc 9683).

…

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

…

4.2.3 Miscellaneous Information

…

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

1) designation of the chart or title of chart series;

Note. – The title may be abbreviated.

2) name and reference of the sheet;

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

…

4.2.4 Symbols

…

4.2.4.4 CAAP regulatory body shall ensure that as of 18 November 2010, symbols are shown in the manner specified in 4.2.4.2, 4.2.4.3 and Appendix 2 — ICAO Chart Symbols, symbol number 121.

…

4.2.5 Units of Measurement

…

4.2.5.7 Conversion Scales (Kilometers/Nautical miles, meters/feet) shall be provided on each chart on which distances, elevation, altitudes and heights are shown. The conversion scale shall be placed on the face of each chart.

…

4.2.8 Spelling of geographical names

…

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

…

4.2.9 Abbreviations

4.2.9.1 Abbreviations shall be used on aeronautical charts whenever they are appropriate.

Note - Abbreviations should be selected from the Procedures for Air Navigation Services--- ICAO Abbreviations and Codes (ICAO *Doc 8400*).

…

4.2.11 Colors

4.2.11.1 Colors used on charts should conform to Appendix 3 - Color guide of this CAR-ANS.

4.2.12 Relief

…

4.2.12.2 Where relief is shown by hypsometric tints, the tints should be based on those shown in the Hypsometric Tint Guide in Appendix 4 of this CAR-ANS.

4.2.12.3 Where spot elevations are used they shall be shown for selected critical points.

…

4.2.14 Air traffic services airspaces

…

4.2.14.2 On charts used for visual flight, those parts of the ATS Airspace Classification table published in Appendix 11.4 of CAR-ANS Part 11 applicable to the airspace depicted on the chart, should be in the face or reverse of each chart.

…

4.2.15 Magnetic variation

…

4.2.15.3 For instrument procedure charts, the publication of a magnetic variation change should be completed within a maximum of six AIRAC cycles.

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

4.2.16 Typography

Note —Samples of type suitable for use on aeronautical charts are included in Aeronautical Charts Manual (ICAO Doc 8697).

4.2.17 Aeronautical data

4.2.17.1 Aeronautical Charts service providers shall take all necessary measures to introduce a properly organized quality system containing procedures, processes and resources necessary to implement quality management at each function stage as outlined in CAR-ANS Part 15, 15.3.6. The execution of such quality management shall be made demonstrable for each function stage when required. In addition, CAAP or aeronautical chart producing company shall ensure that established procedures exist in order that aeronautical data at any moment are traceable to its origin so to allow any data anomalies or error, detected during the production/maintenance phases or in the operational use, be corrected.

Note — Specifications governing the quality system are given in CAR-ANS Part 15, 15.3.2.

4.2.17.2 CAAP regulatory body shall ensure that the chart resolution of aeronautical data shall be that as specified for a particular chart.

Note. — Specifications concerning the chart resolution for aeronautical data are contained in Manual of Standards for Aeronautical Information Service (MOS AIS), Appendix 1.

4.2.17.3 CAAP regulatory body shall ensure that integrity of aeronautical data is maintained throughout the data process from origination to distribution to the next intended user.

Note. — Specifications concerning the integrity classification related to aeronautical data are provided in MOS-AIS, Appendix 1.

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

Note.— Detailed specifications concerning digital data error detection techniques are contained in MOS-AIS.

4.2.18 Common reference system

…

4.2.18.1.1 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 (ICAO Doc 9674).

…

4.2.18.1.3 The chart resolution of geographical coordinates shall be that specified for a particular chart series.

…

Note 2 — Specifications concerning the accuracy and integrity classification of WGS-84 related aeronautical data are contained in MOS-AIS, Appendix 1.

…

4.2.18.2.2 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.

…

Note 2.— Specifications concerning the accuracy and integrity classification of elevation and geoid undulation at specific positions at aerodromes/heliports are contained in MOS-AIS, Appendix 1.

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

Note.— Specifications concerning the chart resolution of elevation and geoid undulation are contained in MOS-AIS, Appendix 1.

…

4.3 AERODROME OBSTACLE CHART — ICAO TYPE A (OPERATING LIMITATIONS)

4.3.1 Function

This chart, in combination with the Aerodrome Obstacle Chart — ICAO Type C or with the relevant information published in the AIP, shall provide the data necessary to enable an operator to comply with the operating limitations of Philippine Civil Aviation Regulations (PCAR) Part 8 – Operations, Chapters 8.7 and 8.8.

…

4.3.4 Coverage and scale

…

4.3.4.3 The vertical scale should be ten times the horizontal scale.

…

4.3.5 Format

…

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

…

4.3.8 Aeronautical data

…

4.3.8.4.1.1 The nature of the runway and stopway surfaces should be indicated.

4.3.8.4.1.2 Stopways should be identified as such and shall be shown by a broken line.

4.3.9 Accuracy

…

4.3.9.2 The horizontal dimensions and the elevations of the runway, stopway and clearway to be printed on the chart should be determined to the nearest 0.5 m (1 ft).

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

…

4.4 AERODROME OBSTACLE CHART — ICAO TYPE B

…

4.4.2 Availability

4.4.2.1 Aerodrome Obstacle Charts — ICAO Type B should be made available, in the manner prescribed in 4.1.3.2, for all aerodromes regularly used by international civil aviation.

…

4.4.9 Aeronautical data

…

4.4.9.1.1 The nature of the runway and stopway surfaces should be given.

4.4.9.1.2 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 should be indicated in a prominent manner.

4.4.9.1.3 The extent of tree areas and relief features, part of which constitute obstacles, should be shown.

4.4.10 Accuracy

…

4.4.10.2 The horizontal dimensions and the elevations of the movement area, stopways and clearways to be printed on the chart should be determined to the nearest 0.5 m (1 ft).

4.4.10.3 The order or accuracy of the field work and the precision of chart production should be such that the resulting data will be within the maximum deviations indicated herein:

…

4.5 AERODROME TERRAIN AND OBSTACLE CHART — ICAO (ELECTRONIC)

…

4.5.5 Chart content

…

4.5.5.2.2 The terrain feature shall be portrayed in a manner that provides an effective general impression of a terrain. This shall be a representation of terrain surface by continuous elevation

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

Note.— In accordance with CAR-ANS Part 15, 15.5 and MOS-AIS, Chapter 5 and Appendices 1 and 8, the DEM for Area 2 post spacing (grid) is specified at 1 arc second (approximately 30 m).

4.5.5.2.3 Representation of terrain surface should be provided as a selectable layer of contour lines in addition to the DEM.

4.5.5.2.4 An ortho-rectified image which matches the features on the DEM with features on the overlying image should be used to enhance the DEM. The image should be provided as a separate selectable layer.

…

4.5.5.2.6 Additional terrain attributes provided in the database(s) should be linked to the portrayed terrain feature.

Note — Specifications concerning terrain attributes are contained in MOS-AIS Appendix 6, Table A6-1.

4.5.5.3 Obstacle features

4.5.5.3.1 Obstacle features, and associated attributes, portrayed or database-linked to the chart shall be based on obstacle data sets which satisfy the requirements of CAR-ANS Part 15, 15.5.

Note — Specifications concerning obstacle data sets are contained in MOS-AIS, Chapter 5 and Appendices 1, 6 and 8.

…

4.5.5.3.4 Additional obstacle attributes provided in the database(s) should be linked to the portrayed obstacle feature.

Note.— Specifications concerning obstacle attributes are contained in MOS-AIS, Appendix 6, Table A6-2.

4.5.5.4 Aerodrome features

4.5.5.4.1 Aerodrome features, and associated attributes, portrayed and database-linked to the chart shall be based on aerodrome data which satisfy the requirements of CAR-ANS Part 15, 15.5.

Note.— Specifications concerning aerodrome features and associated attributes are contained in MOS-AIS, Chapter 5 and Appendix 1.

…

4.5.6 Accuracy and resolution

4.5.6.1 The order of accuracy of aeronautical, terrain and obstacle data shall be in accordance with its intended use.

Note.— Specifications concerning the accuracy of aeronautical, terrain and obstacle data are contained in the MOS-AIS, Appendix 1.

4.5.6.2 The aeronautical, terrain and obstacle data resolution shall be commensurate with the actual data accuracy.

Note.— Specifications concerning the order of resolution for aeronautical, terrain and obstacle data are provided in the MOS-AIS, Appendix 1.

…

4.5.7 Electronic functionality

…

4.5.7.4 The chart should include its own "reader" software.

…

4.6 PRECISION APPROACH TERRAIN CHART — ICAO

…

4.6.3 Scale

4.6.3.1 The horizontal scale should be 1:2,500, and the vertical scale 1:500.

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

…

4.6.5 Plan and profile information

…

4.6.5.2 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 should be shown to a distance not exceeding 2 000 m (6 500 ft) from the runway threshold.

4.6.5.3 The ILS reference datum height should be shown to the nearest half meter or foot.

4.7 ENROUTE CHART — ICAO

4.7.3 Coverage and Scale

…

4.7.3.1 Layout of sheet lines should be determined by the density and pattern of the ATS route structure.

…

4.7.4 Projection

4.7.4.1 A conformal projection on which a straight line approximates a great circle should be used.

…

4.7.6 Culture and topography

…

4.7.6.2 Within each quadrilateral formed by the parallels and meridians the area minimum altitude shall be shown, except as provided for in 4.7.6.3.

Note 1.— Quadrilaterals formed by the parallels and meridians normally correspond to the whole degree of latitude and longitude. Regardless of the chart scale being used, the area minimum altitude relates to the consequent quadrilateral.

Note 2. — Refer to the Procedures for Air Navigation — Aircraft Operations *(PANS-OPS, ICAO Doc 8168), Volume II, Part I, Section 2, Chapter 1, paragraph 1.8 for method for determination of area minimum altitude.*

4.7.7 Magnetic variation

4.7.7.1 Isogonals should be indicated and the date of the isogonic information given.

…

4.7.9 Aeronautical data

…

4.7.9.3.1.1 The components shall include the following:

…

4) 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;

Note.— Guidance material on the organization of ATS routes for en-route flight publication which may be used to facilitate charting is contained in the Aeronautical Information Services Manual *(ICAO Doc 8126).*

…

4.8 AREA CHART — ICAO

…

4.8.4 Projection

4.8.4.1 A conformal projection on which a straight line approximates a great circle should be used.

…

4.8.6 Culture and topography

…

4.8.6.2 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 should 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, should be shown printed in black. Obstacles should also be shown.

4.8.9 Aeronautical data

…

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

…

Note 2.— Refer to the Procedures for Air Navigation — Aircraft Operations (PANS-OPS, ICAO Doc 8168), Volume II, Part I, Section 2, Chapter 1, paragraph 1.8 for method for determination of area minimum altitude.

…

4.9 STANDARD DEPARTURE CHART — INSTRUMENT (SID) — ICAO

…

4.9.3 Coverage and Scale

…

4.9.3.2 The chart should be drawn to scale.

…

4.9.4 Projection

4.9.4.1 A conformal projection on which a straight line approximates a great circle should be used.

4.9.4.2 When the chart is drawn to scale, parallels and meridians should be shown at suitable intervals.

…

4.9.6 Culture and topography

…

4.9.6.2 To improve situational awareness in areas where significant relief exists, the chart should 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.

…

4.9.9 Aeronautical Data

…

4.9.9.4 Air traffic services system

…

4.9.9.4.1.1 The component shall comprise the following:

…

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

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

b) when the radio navigation aid is used as a significant point for area navigation:
   i) plain language name; and
   ii) identification;

3) significant points not marked by the position of a radio navigation aid including:

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

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

4) applicable holding patterns;

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

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

…

4.10 STANDARD ARRIVAL CHART – INSTRUMENT (STAR) – ICAO

…

4.10.3 Coverage and Scale

…

4.10.3.2 The chart should be drawn to scale.

…

4.10.4 Projection

4.10.4.1 A conformal projection on which a straight line approximates a great circle should be used.

4.10.4.2 When the chart is drawn to scale, parallels and meridians should be shown at suitable intervals.

…

4.10.6 Culture and topography

…

4.10.6.2 To improve situational awareness in areas where significant relief exists, the chart should 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.

…

4.10.9 Aeronautical data

…

4.10.9.4 Air traffic services system

…

4.10.9.4.1.1 The components shall comprise the following:

…

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

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

b) when the radio navigation aid is used as a significant point for area navigation:
   i) plain language name; and
   ii) identification;

3) significant points not marked by the position of a radio navigation aid including:

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

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

4) applicable holding patterns;

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

6) area speed restrictions, where established;

…

4.11 INSTRUMENT APPROACH CHART — ICAO

…

4.11.3 Coverage and Scale

…

4.11.3.3.1 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.

4.11.3.3.2 A distance scale should be shown directly below the profile.

…

4.11.4 Format

4.11.4.1 The sheet size should be 210 x 297 mm (8.27 x 11.69 in).

…

4.11.7 Culture and topography

…

4.11.7.3 In areas where relief is lower than specified in 4.11.7.2, all relief exceeding 150 m (500 ft) above the aerodrome elevation should 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, should also be shown printed in black.

…

4.11.10 Aeronautical Data

…

4.11.10.2 Obstacles

…

4.11.10.2.2 If one or more obstacles are the determining factor of an obstacle clearance altitude/ height, those obstacles should be identified.

…

4.11.10.2.4 The heights of obstacles above a datum other than mean sea level (see 4.11.10.2.3) should be shown. When shown, they should be given in parentheses on the chart.

…

4.11.10.4 Radio communication facilities and navigation aid

4.11.10.4.1.1 When a radio navigation aid is used as a significant point for area navigation, only its plain language name and identification shall be shown.

…

4.11.10.4.3 When the final approach fix is used for conventional navigation (or final approach point for an ILS approach procedure), it should be identified with its distance (in nautical miles) from the DME.

…

4.11.10.6.2 The plan view should show the distance to the aerodrome from each radio navigation aid concerned with the final approach.

…

4.11.10.6.4 Heights required by procedures should be shown in parentheses, using the height datum selected in accordance with 4.11.10.2.5.

4.11.10.6.5 The profile view should include a ground profile or a minimum altitude/height portrayal as follows:

…

4.11.10.7.1 The established aerodrome operating minima shall be shown.

…

4.11.10.8.3 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 should be included.

…

4.11.10.8 Supplementary Information

…

4.11.10.8.8 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, ICAO Doc 8168), Volume II, a cautionary note shall be included.

4.11.10.8.9 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.

…

4.12 VISUAL APPROACH CHART — ICAO

…

4.12.3 Scale

…

4.12.3.2 The scale should not be smaller than 1:500,000.

Note - A scale of 1:250,000 or 1:200,000 is preferred.

4.12.3.3 When an Instrument Approach Chart is available for a given aerodrome, the Visual Approach Chart should be drawn to the same scale.

4.12.4 Format

The sheet size should be 210 x 297 mm (8.27 x 11.69 in).

…

4.12.7 Culture and topography

…

4.12.7.1.1 Geographical place names should be included only when they are required to avoid confusion or ambiguity.

…

4.12.7.4 When shown, spot elevations should be carefully selected.

Note.— The value of certain spot elevations/heights in relation to both mean sea level and aerodrome elevation may be given.

…

4.12.10 Aeronautical data

…

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

…

4.13 AERODROME/HELIPORT CHART – ICAO

…

4.13.2 Availability

4.13.2.1 The Aerodrome/Heliport Chart — ICAO shall be made available in the manner prescribed in 4.1.3.2 for all aerodromes/heliports regularly used by international civil aviation.

Note.— Under certain conditions an Aerodrome Ground Movement Chart — ICAO and an Aircraft Parking/Docking Chart — ICAO may have to be provided (see Chapters 4.14 and 4.15); in which case, the elements portrayed on these supplementary charts need not be duplicated on the Aerodrome/ Heliport Chart — ICAO.

…

4.13.6 Aerodrome/heliport data

…

4.13.6.2 For aerodromes accommodating aeroplanes with folding wing tips, the location where the wing tips may be safely extended should be shown on the chart.

…

4.13.6.3 In addition to the items in 4.13.6.1 relating to heliports, the chart shall show:

…

4.14 AERODROME GROUND MOVEMENT CHART – ICAO

…

4.14.2 Availability

4.14.2.1 The Aerodrome Ground Movement Chart — ICAO should be made available in the manner prescribed in 4.1.3.2 where, due to congestion of information, details necessary for the ground movement of aircraft along the taxiways to and from the aircraft stands cannot be shown with sufficient clarity on the Aerodrome/Heliport Chart — ICAO.

…

4.14.3 Coverage and Scale

…

4.14.3.2 A linear scale should be shown.

…

4.14.5 Magnetic variation

…

4.14.5.2 Magnetic variation to the nearest degree and its annual change should be shown.

Note.— This chart need not be True North orientated.

…

4.14.6 Aerodrome data

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

…

4.14.6.2 For aerodromes accommodating aeroplanes with folding wing tips, the location where the wing tips may be safely extended should be shown on the chart.

…

4.15 AIRCRAFT PARKING/DOCKING CHART — ICAO

…

4.15.2 Availability

4.15.2.1 The Aircraft Parking/ Docking Chart — ICAO should be made available in the manner prescribed in 4.1.3.2 where, due to the complexity of the terminal facilities, the information cannot be shown with sufficient clarity on the Aerodrome/Heliport Chart — ICAO or on the Aerodrome Ground Movement Chart — ICAO.

4.15.3 Coverage and Scale

…

4.15.3.2 A linear scale should be shown.

…

4.15.5 Magnetic variation

…

4.15.5.2 Magnetic variation to the nearest degree and its annual change should be shown.

Note.— This chart need not be True North orientated.

…

4.16 WORLD AERONAUTICAL CHART — ICAO 1:1 000 000

…

4.16.2

…

4.16.2.2 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 should be determined by regional agreement.

4.16.3 Scale

…

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

…

4.16.4 Format

4.16.4.1 The title and marginal notes shall be in English language.

…

4.16.4.3 The method of folding should be as follows:

…

4.16.4.4 Whenever practicable, the sheet lines should conform with those shown in the index in Appendix 5.

…

4.16.4.5 Overlaps should 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 should 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.

…

4.16.5 Projection

…

4.16.5.3.1 The length of the graduation marks should 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.

…

4.16.7 Culture and topography

…

4.16.7.1.2 Cities and towns of sufficient size should be indicated by the outline of their built-up areas and not of their established city limits.

…

4.16.7.2.2 Important tunnels should be shown.

Note.— A descriptive note may be added.

…

4.16.7.3.2 Roads should not be shown in built-up areas unless they can be distinguished from the air as definite landmarks.

Note.— The numbers or names of important highways may be shown.

4.16.7.4 Landmarks

4.16.7.4.1 Natural and cultural landmarks, such as bridges, prominent transmission lines, permanent cable car installations, wind turbines, mine structures, forts, ruins, levees, pipelines, and rocks, bluffs, cliffs, sand dunes, isolated lighthouses, lightships, etc., when considered to be of importance for visual air navigation, should be shown.

…

4.16.7.6.2 The tint covering large open water areas should be kept very light.

Note.— A narrow band of darker tone may be used along the shore line to emphasize this feature.

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

Note.— Groups of rocks may be shown by a few representative rock symbols within the area.

…

4.16.7.9.3 The spot elevation of the highest point in any sheet should be cleared of hypsometric tinting.

…

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

4.16.7.12 Wooded areas

4.16.7.12.1 Wooded areas should be shown.

Note.— On high latitude charts, the approximate extreme northern or southern limits of tree growth may be shown.

…

4.17 AERONAUTICAL CHART — ICAO 1:500 000

…

4.17.2 Availability

4.17.2.1 The Aeronautical Chart — ICAO 1:500 000 should be made available in the manner prescribed in 4.1.3.2 for all areas delineated in Appendix 5.

…

4.17.3 Availability

4.17.3.1.1 The length of the linear scale should be not less than 200 mm (8 in).

…

4.17.4 Format

…

4.17.4.3 The method of folding should be as follows:

…

4.17.4.4 Whenever practicable, sheets should be quarter sheets of the World Aeronautical Chart — ICAO 1:1 000 000. An appropriate index to adjacent sheets, showing the relationship between the two chart series shall be included on the face of the chart or on the reverse side.

Note.— Sheet lines may be varied to satisfy particular requirements.

4.17.4.5 Overlaps should be provided by extending the chart area on the top and right side beyond the area given on the index. This overlap area should contain all aeronautical, topographical, hydrographical and cultural information. The overlap should extend up to 15 km (8 NM), if possible, but in any case from the limiting parallels and meridians of each chart to the neat line.

4.17.5 Projection

…

4.17.5.2 The projection of the World Aeronautical Chart — ICAO 1:1 000 000 should be used.

…

4.17.5.4.1 The length of the graduation marks should 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 9).08 in) extending on both sides of the graticule line for the 10’ intervals.

…

4.17.5.5.1 Each meridian and parallel should be numbered within the body of the chart whenever this data is required operationally.

…

4.17.6 Identification

…

4.17.6.1.1 Where applicable, sheets should also be identified by the reference number of the corresponding World Aeronautical Chart — ICAO 1:1 000 000, with the addition of one or more of the following letter suffixes indicating the quadrant or quadrants:

…

4.17.7 Culture and topography

…
4.17.7.1.2 Cities and towns of sufficient size should be indicated by the outline of their built-up areas and not of their established city limits.
…
4.17.7.3.2 Roads should not be shown in built-up areas unless they can be distinguished from the air as definite landmarks.

Note.— The numbers or names of important highways may be shown.

4.17.7.4 Landmarks

4.17.7.4.1 Natural and cultural landmarks, such as bridges, prominent transmission lines, permanent cable car installations, wind turbines, mine structures, lookout towers, forts, ruins, levees, pipelines, rocks, bluffs, cliffs, sand dunes, isolated lighthouses and lightships, when considered to be of importance for visual air navigation, should be shown.
…
4.17.7.6.1 All water features compatible with the scale of the chart comprising shore lines, lakes, rivers and streams (including those non-perennial in nature), and salt lakes shall be shown.
…
4.17.7.6.2 The tint covering large open water areas should be kept very light.

Note.— A narrow band of darker tone may be used along the shore line to emphasize this feature.

4.17.7.6.3 Reefs and shoals, including rocky ledges, tidal flats, isolated rocks, sand, gravel, stone and all similar areas should be shown by symbols when of significant landmark value.
…
4.17.7.9.3 The spot elevation of the highest point on any sheet should be cleared of hypsometric tinting.
…
4.17.7.11.1 Escarpments should be shown when they are prominent landmarks or when cultural detail is very sparse.
…
4.17.7.12.1 Wooded areas should be shown.

Note.— On high latitude charts the approximate extreme northern or southern limits of tree growth may be shown.
…
4.18 AERONAUTICAL NAVIGATION CHART — ICAO SMALL SCALE
…
4.18.2 Availability

4.18.2.1 The Aeronautical Navigation Chart — ICAO Small Scale should be made available in the manner prescribed in 4.1.3.2 for all areas delineated in Appendix 5.

Note.— The selection of this scale as an alternative to the World Aeronautical Chart — ICAO 1:1 000 000 is covered by 4.16.2.1 and 4.16.2.2.

4.18.3 Coverage and scale

4.18.3.1 The Aeronautical Navigation Chart — ICAO Small Scale should provide, as a minimum, complete coverage of the major land masses of the world.

Note 1.— A sheet layout for this series is contained in the Aeronautical Chart Manual *(ICAO Doc 8697).*

…

4.18.3.5 The length of the linear scale should be not less than 200 mm (8 in).

…

4.18.6 Culture and topography

…

4.18.6.1.2 Cities and towns of sufficient size should be indicated by the outline of their built-up areas and not of their established city limits.

…

4.18.6.2.2 Important tunnels should be shown.

Note.— A descriptive note may be added.

…

4.18.6.3.2 Roads should not be shown in built-up areas unless they can be distinguished from the air as definite landmarks.

4.18.6.4 Landmarks

Natural and cultural landmarks, such as bridges, prominent transmission lines, permanent cable car installations, mine structures, forts, ruins, levees, pipelines and rocks, bluffs, cliffs, sand dunes, isolated lighthouses and lightships, when considered to be of importance for visual air navigation, should be shown.

Note.— Descriptive notes may be added.

…

4.18.6.6.2 The tint covering large open water areas should be kept very light.

Note.— A narrow band of darker tone may be used along the shore line to emphasize this feature.

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

…

4.18.6.9.3 The spot elevation of the highest point in any sheet should be cleared of hypsometric tinting.

…

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

4.18.6.12 Wooded areas

4.18.6.12.1 Wooded areas of large extent should be shown.

…

4.18.6.14.1 Subdued colors should be used for the chart background to facilitate plotting.

4.18.6.14.2 Good color contrast should be ensured to emphasize features important to visual air navigation.

…

4.18.8 Aeronautical data

…

4.18.8.3.1 Prohibited, restricted and danger areas should be shown when considered to be of importance to air navigation.

4.18.8.4 Air traffic services system

4.18.8.4.1 Significant elements of the air traffic services system should be shown when considered to be of importance to air navigation.

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

Note.— ADIZ procedures may be described in the chart legend.

…

4.19 PLOTTING CHART — ICAO

…

4.19.2 Availability

4.19.2.1 This chart should be made available, in the manner prescribed in 4.1.3.2, to cover major air routes over oceanic areas and sparsely settled areas used by international civil aviation.

Note.— In areas where the Enroute Chart — ICAO is provided there may be no requirement for a plotting chart.

4.19.3 Coverage and scale

4.19.3.1 Where practicable, the chart for a particular region should cover major air routes and their terminals on a single sheet.

4.19.3.2 The scale should be governed by the area to be covered.

Note.— Normally, the scale will range from 1:3 000 000 to 1:7 500 000.

4.19.4 Format

4.19.4.1 The sheet should be of a size that can be adapted for use on a navigator’s plotting table.

4.19.5 Projection

4.19.5.1 A conformal projection on which a straight line approximates a great circle should be used.

…

4.19.5.2.1 The intervals should be arranged to permit accurate plotting to be carried out with a minimum of time and effort.

…

4.19.5.2.3 Parallels and meridians should be numbered so that a number appears at least once every 15 cm (6 in) on the face of the chart.

…

4.19.7 Culture and topography

…

4.19.7.3 Particularly hazardous or prominent relief features should be emphasized.

Note.— Large cities and towns may be shown.

…

4.19.9 Aeronautical data

…

4.19.9.2 Aeronautical ground lights and marine lights useful for air navigation should be shown where other means of navigation are non-existent.

…

4.21 ATC SURVEILLANCE MINIMUM ALTITUDE CHART — ICAO

…

4.21.2 Availability

4.21.2.1 The ATC Surveillance Minimum Altitude Chart — ICAO should be made available, in the manner prescribed in 4.1.3.2, where radar vectoring procedures are established and radar minimum altitudes cannot be shown adequately on the Area Chart — ICAO, Standard Departure Chart — Instrument (SID) — ICAO or Standard Arrival Chart — Instrument (STAR) — ICAO.

4.21.3 Coverage and scale

…

4.21.3.3 The chart should be drawn to the same scale as the associated Area Chart — ICAO.

4.21.4 Projection

4.2.1.4.1 A conformal projection on which a straight line approximates a geodesic line should be used.

4.2.1.4.2 Graduation marks should be placed at consistent intervals along the neat lines, as appropriate.

…

4.21.9 Aeronautical data

…

4.21.9.3.2 A textual description of communication failure procedures in relation to radar control should be provided and should, whenever feasible, be shown on the chart or on the same page that contains the chart.

…

4.24 DISTRIBUTION

This Civil Aviation Regulations-Air Navigation Services Part 4 (CAR-ANS Part 4) shall be distributed to all air traffic services facilities involved in the flight procedures design, publication of aeronautical charts, and those engaged in flight operations.

…

APPENDIX 2. ICAO CHART SYMBOLS

…

AIR TRAFFIC SERVICES

…

125	Procedure altitudes/flight levels	Altitude/flight level "window"	17 000 10 000	FL 220 10 000
		"At or above" altitude/flight level	7000	FL 070
		"At or below" altitude/flight level	5 000	FL 050
		"At" altitude/flight level	3 000	FL 030
		"Recommended" altitude/flight level	5 000	FL 050
		"Expected" altitude/flight level	Expect 5 000	Expect FL 050

xxx

"End of Amendment"

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i. ***Separability Clause.*** **-** If, for any reason, any provision of this Memorandum Circular is declared invalid or unconstitutional, the other part or parts thereof which are not affected thereby shall continue to be in full force and effect.

ii. ***Repealing Clause.*** **-** All orders, rules, regulations and issuances, or parts thereof which are inconsistent with this Memorandum Circular are hereby repealed, superseded or modified accordingly.

iii. ***Determination of changes.*** **–** To highlight the amendments and/or revisions in the Memorandum Circular, the deleted text shall be shown with strikethrough and the new inserted text shall be highlighted with grey shading, as illustrated below:

1. Text deleted: ~~Text to be deleted is shown with a line through it.~~
2. New text inserted: New text is highlighted with grey shading.
3. New text replacing existing text: ~~Text to be deleted is shown with a line through it~~ followed by the replacement text which is highlighted with grey shading.

iv. ***Effectivity Clause.*** **-** This Memorandum Circular shall take effect fifteen (15) days following completion of its publication in a newspaper of general circulation or the Official Gazette and a copy filed with the U.P. Law Center - Office of the National Administrative Register. The amendment shall be incorporated to Philippine CAR-ANS in the next regular Amendment Cycle.

So Ordered. Signed this **13** day of **October** 2020, at the Civil Aviation Authority of the Philippines, MIA Road, Pasay City, Metro Manila, 1301.

CAPTAIN JIM C. SYDIONGCO
Director General