LEGAL NOTICE NO. 100

REPUBLIC OF TRINIDAD AND TOBAGO

THE CIVIL AVIATION ACT, 2001

REGULATIONS

MADE BY THE AUTHORITY WITH THE APPROVAL OF THE MINISTER UNDER SECTION 33 OF THE CIVIL AVIATION ACT

THE CIVIL AVIATION [(NO. 15) AIR NAVIGATION SERVICES] (AMENDMENT) REGULATIONS, 2008

Citation

1. These Regulations may be cited as the Civil Aviation [(No. 15) Air Navigation Services] (Amendment) Regulations, 2008.

Interpretation

2. In these Regulations—

"the Act" means the Civil Aviation Act, 2001; Act No. 11 of 2001

"the Regulations" means the Civil Aviation [(No. 15) Air Navigation Services] Regulations, 2006. L. N. No. 307

Regulation 2 amended

3. (1) Regulation 2 of the Regulations is amended—

(a) in subregulation (1)—

(i) by deleting the following definitions:

"automatic dependent surveillance" means a surveillance technique in which aircraft automatically provide, via a data link, data derived from on-board navigation and position fixing systems, including aircraft identification, four dimensional position and additional data as appropriate;

"quality" means totality of characteristics of an entity that bear on its ability to satisfy stated and implied needs;

"quality assurance" means all the planned and systematic activities implemented within the quality system, and demonstrated as needed, to provide adequate confidence that an entity will fulfill requirements for quality;

"quality control" means the operational techniques and activities that are used to fulfill requirements for quality;

"quality management" means all activities of the overall management function that determine the quality policy, objectives and responsibilities, and implementing them by means such as quality planning, quality control, quality assurance and quality improvement within the quality system;

"quality system" means the organisational structure, procedures, processes and resources needed to implement quality management;

"requirements for quality" means expression of the needs or their translation into a set of quantitatively or qualitatively stated requirements for the characteristics of an entity to enable its realisation and examination;

"traceability" means ability to trace the history, application or location of an entity by means of recorded identifications;

"validation" means confirmation by examination and provision of objective evidence that the particular requirements for a specific intended use are fulfilled;

"verification" means confirmation by examination and provision of objective evidence that specified requirements have been fulfilled;

(ii) by inserting in the appropriate alphabetical sequence the following definitions:

"ADS" means a surveillance technique in which aircraft automatically provide, via a data link, data derived from on-board navigation and position-fixing systems, including aircraft identification, four-dimensional position and additional data, as appropriate;

"ADS-C" is a means by which the terms of an ADS-C agreement will be exchanged between the ground system and the aircraft, via a data link, specifying under what conditions ADS-C reports would be initiated, and what data would be contained in the reports;

Note: The abbreviated term "ADS contract" is commonly used to refer to ADS event contract, ADS demand contract, ADS periodic contract or an emergency mode.

"ADS-C agreement" means a reporting plan which establishes the conditions of ADS-C data reporting such that data required by the air traffic services unit and frequency of ADS-C reports which have to be agreed to prior to using ADS-C in the provision of air traffic services;

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

"ADS-B" is a means by which aircraft, aerodrome vehicles and other objects can automatically transmit and/or receive data such as identification, position and additional data, as appropriate, in a broadcast mode via a data link;

"application" means the manipulation and processing of data in support of user requirements;

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

"ATS surveillance service" means the service provided directly by means of an ATS surveillance system;

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

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

"data link-VOLMET" means the provision of current aerodrome routine meteorological reports METAR and aerodrome special meteorological reports SPECI, aerodrome forecasts TAF, SIGMET, special air-reports not covered by a SIGMET and, where available, AIRMET via data link;

"data product specification" means a detailed description of a data set or data set series together with additional information that will enable it to be created, supplied to and used by another party;

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

"data set" means an identifiable collection of data;

"data set series" means a collection of data sets sharing the same product specification;

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

Note: DTM is sometimes referred to as DEM.

"feature attribute" means the characteristic of a feature;

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

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

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

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

"MEA" means the altitude for an *en route* segment that provides adequate reception of relevant navigation faciltites and ATS communications, complies with the airspace structure and provides the required obstacle clearance;

"MOCA" means the minimum altitude for a defined segment of flight that provides the required obstacle clearance;

"portrayal" means presentation of information to humans;

"quality" means the degree to which a set of inherent characteristics fulfills requirements;

Note 1: The term "quality" can be used with adjectives such as poor, good or excellent.

Note 2: "Inherent", as opposed to "asssigned", means existing in something, especially as a permanent characteristic.

"quality assurance" means the part of quality management focused on providing confidence that quality requirements will be fulfilled;

"quality control" means the part of quality management focused on fulfilling quality requirements;

"quality management" means the co-ordinated activities to direct and control an organisation with regard to quality;

"RCP type" is a label such as RCP 240 that represents the values assigned to RCP parameters for communication transaction time, continuity, availability and integrity;

"requirement" means the need or expectation that is stated, generally implied or obligatory;

Note 1: "Generally implied" means that it is custom or common practice for the organization, its customers and other

interested parties, that the need or expectation under consideration is implied.

Note 2: A qualifier can be used to denote a specific type of requirement, e.g., product requirement, quality management requirement, customer requirement.

Note 3: A specified requirement is one which is stated, for example, in a document.

Note 4: Requirement can be generated by different interested parties.

"traceability" means the ability to trace the history, application or location of that which is under consideration;

Note: When considering product, traceability can relate to—the origin of materials and parts; the processing history; and the distribution and location of the product after delivery.

"RCP" means a statement of the performance requirements for operational communication in support of specific ATM functions;

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

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

"validation" means confirmation through the provision of objective evidence, that the requirements for a specific intended use or application have been fulfilled;

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

"verification" means confirmation through the provision of objective evidence, that specified requirements have been fulfilled;

Note 1: The term "verified" is used to designate the corresponding status.

Note 2: "Confirmation can comprise activities such as—

performing alternative calculations;
comparing a new design specification with a similar proven design specification;
undertaking tests and demonstrations; and
reviewing documents prior to issue.".

"VOLMET broadcast" means the provision, as appropriate, of current METAR, SPECI, TAF and SIGMET by means of continuous and repetitive voice broadcasts;";

(b) in subregulation (2), by inserting in the appropriate alphabetical sequence definitions for the following acronyms:

"AME" means area minimum altitude;

"AIRMET" means . . . .

"ATM" means Air Traffic Management;

"ADS-B" means automatic dependent surveillance—broadcast;

"ADS-C" means automatic dependent surveillance—contract;

"D-ATIS" means data link-automatic terminal information service;

"DEM" means Digital Elevation Model;

"DTM" means Digital Terrain Model;

"D-VOLMET" means data link-VOLMET;

"MEA" means minimum *en route* altitude;

"METAR" means aerodrome routine meteorological reports;

"MOCA" means minimum obstacle clearance altitude;

"PSR" means primary surveillance radar;

"RCP" means required communication performance;

"SPECT" means aerodrome special meteorological reports;

"TAF" means aerodrome meteorological forecasts;

"Voice-ATIS" means Voice-automatic terminal information service;".

Regulation 29 amended

4. Regulation 29 of the Regulations is amended by—

(a) renumbering regulation 29(1) as regulation 29; and

(b) in paragraph *(c)*, by inserting after the words "form in Appendix" the word "3".

Regulation 30 amended

5. Regulation 30 of the Regulations is amended—

(a) in subregulation (1), by deleting the words "a take-off flight path" and substituting the words "the take-off flight path areas or where the Aerodrome Terrain and Obstacle Chart—ICAO (Electronic) is provided in accordance with regulation 37B"; and

(b) in subregulation (2), by inserting after the words "to that effect shall be published" the words "in the AIP".

Regulations 37A and 37B inserted

6. The Regulations are amended by inserting after regulation 37 the following regulations:

"***The Director General to make available Aeronautical Chart—ICAO 1:5000 000***

The Director General to make available Aeronautical Chart—ICAO 1:500 000

37A. The Director General shall ensure that Aeronautical Chart—ICAO 1:500 000—

(a) is made available in the manner prescribed in regulation 27 for Trinidad and Tobago; and

(b) provides the necessary information to satisfy the requirements of visual air navigation for low speed, short or medium-range operations at low and intermediate altitudes and meet the standards prescribed in PART J of Schedule 3.

The Director General to make available Aerodrome Terrain and Obstacle Chart—ICAO (Electronic)

"***The Director General to make available Aerodrome Terrain and Obstacle Chart—ICAO (Electronic)***

37B. The Director General shall ensure that Aerodrome Terrain and Obstacle Chart—ICAO (Electronic)—

(a) is made available in the manner prescribed in regulation 27 for all aerodromes regularly used by international civil aviation from 18th November, 2010; and

(b) portrays the terrain and obstacle data in combination with aeronautical data and meet the standards prescribed in PART K of Schedule 3.".

7. Schedule 1 of the Regulations is amended— Schedule 1 amended

(a) in Part A, by inserting after clause 5 the following clause:

"Required communication performance

5A. (1) Required communication performance shall be prescribed by the Authority on the basis of regional air navigation agreements.

(2) The required communication performance type prescribed by the Authority shall be appropriate to the ATS provided in the airspace concerned.".

Note: Applicable RCP types and associated procedures are published in the Manual of Required Communication Performance.";

(b) in clause 17 of Part A—

(i) in the note to subclause (1), by deleting the word "ADS" and substituting the words "the ADS-B or ADS-C;"; and

(ii) by inserting after subclause (3) the following subclause:

" (4) When an occurrence of unlawful interference with an aircraft takes place or is suspected, ATS units shall, in accordance with locally agreed procedures, immediately inform the appropriate authority designated by the State and exchange necessary information with the operator or its designated representative.";

Note 1: A strayed or unidentified aircraft may be suspected as being the subject of unlawful interference.

Note 2: Procedures relating to the handling of strayed or unidentified aircraft are contained in clause 18.

Note 3: PANS-ATM (Doc. 4444), Chap. 15, 15.1.3 contains more specific procedures related to unlawful interference.";

(c) in clause 18 of Part A by inserting after subclause (2) the following subclause:

" (2B) An ATS unit that considers that a strayed or unidentified aircraft may be the subject of unlawful interference, shall immediately inform the appropriate authority designated by the Authority, in accordance with locally agreed procedures.";

(d) in Appendix 2 of Part A by inserting after clause 3(6) the following subclauses:

" (7) Where there is a need to relocate a significant point, a new name-code designator shall be chosen.

(8) Where the Authority wishes to keep the allocation of specific name-codes for re-use at a different location, such name-codes shall not be used until after a period of at least six months.";

(e) in clause 6 of Part B—

(i) in paragraph *(b)*, by inserting after the word "radar" wherever it occurs, the words "or ADS-B"; and

(ii) in paragraph *(c)*, by deleting the words "ADS data" and substituting the words "ADS-C data";

(f) in clause 2 of Part D, by inserting after subclause (3) the following subclause:

" (4) The rescue co-ordination centre shall be provided without delay with—

(a) any useful additional information especially on the development of the state of emergency through subsequent phases; and

(b) information that the emergency situation no longer exists.";

(g) in Part E—

(i) by inserting after clause 1, the following clause:

" 1A. Where RCP types have been prescribed by the Authority for ATM functions, ATS units shall, in addition to the requirements specified in paragraph (1), be provided with communication equipment which will enable them to provide ATS in accordance with the prescribed RCP types.";

(ii) by inserting after clause 3, the following clause:

" 3A. Where RCP types have been prescribed by the Authority for ATM functions, ATS units shall, in addition to the requirements specified in paragraph (1), be provided with communication equipment which will enable them to provide ATS in accordance with the prescribed RCP types.";

(iii) in clause 3(4)*(a)*(i), by deleting the words "radar control" and substituting the wrods "control using radar or ADS-B,";

(iv) in subclause 3(5)*(c)*, by deleting the words "radar or ADS data" and substituting the words "radar, ADS-B or ADS-C data"; and

(v) in clause 5*(a)*, by deleting the words "or obtained through ADS or other surveillance systems" and substituting the words "or other systems such as ADS-B and ADS-C";

(h) in Part F—

(i) by deleting subclause (2)*(a)* and substituting the following subclause:

"*(a)* Flight information centres and area control centres shall be supplied with meteorological information as described in Annex 3, Appendix 9, 1.3, covering the flight information region or control area and such other areas as may be determined on the basis of regional air navigation agreements, particular emphasis being given to the occurrence or expected occurrence of weather deterioration as soon as this can be determined.";

(ii) in clause 3*(a)*, by deleting the words "current meteorological reports and forecasts" and substituting the words "meteorological information as described in Annex 3, Appendix 9, 1.2"; and

(iii) by deleting clause 4*(a)* and substituting the following paragraph:

"*(a)* aerodrome control towers shall be supplied with meteorological information as described in Annex 3, Appendix 9, 1.1 for the aerodrome with which they are concerned.".

8. Schedule 2 of the Regulations is amended— Schedule 2 amended

(a) in clause 1(4) of Part B, by deleting paragraphs *(a)* through *(k)* and substituting the following paragraphs:

"*(a)* Aerodrome and Heliport Chart—ICAO;

(b) Aerodrome Ground Movement Chart—ICAO;

(c) Aerodrome Obstacle Chart (Type A)—ICAO;

(d) Aerodrome Terrain and Obstacle Chart—ICAO (Electronic);

(e) Aircraft Parking and Docking Chart—ICAO;

(f) Area Chart—ICAO;

(g) ATC Surveillance Minimum Altitude Chart—ICAO;

(h) Instrument Approach Chart—ICAO;

(i) Precision Approach Terrain Chart—ICAO;

(j) Standard Arrival Chart—Instrument (STAR)—ICAO;

(k) Standard Departure Chart—Instrument (SID)—ICAO; and

(l) Visual Approach Chart—ICAO.";

(b) in the Appendix to Part B—

(i) by deleting the words "communication and, navigation" under the subheading "*GEN 1.5 Aircraft instruments, equipment and flight documents"* and substituting the words "communication, navigation and surveillance";

(ii) under subheading "*GEN 3.4.3—Types of Service*" by deleting paragraph *(b)* and substituting the following paragraph:

"*(b)* voice or data link services;";

(iii) under subheading "*GEN 3.5.7—VOLMET services*" by inserting after the words "Description of VOLMET" the words "or VOLMET";

(iv) under subheading "*GEN 3.5.8—SIGMET and AIRMET service*" by deleting paragraph *(d)* and substituting the following paragraph:

"*(d)* SIGMET validity period;";

(v) in the subheading "*ENR 1.6—Radar Services and procedures*" by deleting the word "Radar" and substituting the words "ATS surveillance";

(vi) under subheading "*ENR 1.6.1—Primary Radar*" by deleting paragraphs *(c)* and *(d)* and substituting the following paragraphs:

"*(c)* radar and air-ground communication faiure procedures;

(d) voice and CPDLC position reporting requirements; and

(e) graphic portrayal of area of radar coverage.";

(vii) under subheading "ENR 1.6.2—*Secondary surveillance radar*" by deleting paragraphs *(b)*, *(c)* and *(d)* and substituting the following paragraphs:

"*(b)* air-ground communication failure and unlawful interference procedures;

(c) the system of SSR code assignment;

(d) voice and CPDLC position reporting requirements; and

(e) graphic portrayal of area of SSR coverage.";

(viii) by inserting above subheading "ENR 1.7—Altimeter setting procedures" the following words:

"ENR 1.6.3 Automatic dependent surveillance broadcast (ADS-B)

Description of Automatic dependent surveillance—broadcast (ADS-B) operating procedures, including—

(a) emergency procedures;

(b) air-ground communication failure and unlawful interference procedures;

(c) aircraft identification requirements;

(d) voice and CPDLC position reporting requirements; and

(e) graphic portrayal of area of ADS-B coverage.

Note: The ADS-B description is of particular importance in areas or routes where the possibility of interception exists.";

(ix) under subheading "ENR 3.1—*Lower ATS routes*" by deleting paragraphs *(c)*, *(d)*, *(e)* and *(f)* and substituting the following paragraphs:

(c) upper and lower limits or minimum *en route* altitudes, to the nearest higher fifty metres or one hundred feet and airspace classification;

(d) lateral limits and minimum obstacle clearance altitudes;

(e) direction of cruising levels; and

(f) remarks, including an indication of the controlling unit, its operating channel and, if applicable, its logon address.";

(x) under subheading "ENR 3.2—*Upper ATS routes*" by deleting paragraph *(f)* and substituting the following paragraph:

"*(f)* remarks, including an indication of the controlling unit, its operating channel and, if applicable, its log on address.";

(xi) under subheading "ENR 3.3—*Area navigation routes*" by deleting subclause (6) and substituting the following subclause:

" (6) Remarks, including an indication of the controlling unit, its operating channel and, if applicable, its log on address.";

(xii) under subheading "****AD 2.18—*Air traffic services communication facilities*" by deleting paragraphs *(c)*, *(d)* and *(e)* and substituting the following paragraphs:

"*(c)* channels;

(d) log on address, as appropriate;

(e) hours of operation; and

(f) remarks.";

(xiii) under subheading "****AD 2.22—*Flight procedures*" by deleting the words "detailed description of the conditions and flight procedures, including radar procedures, established on the basis of airspace organization at the aerodrome." and substituting the following words:

" A detailed description of the conditions and flight procedures, including radar or ADS-B procedures, established on the basis of airspace organization at the aerodrome and where established, detailed description of the low visibility procedures at the aerodrome, including—

(a) runways and associated equipment authorized for use under low visibility procedures;

(b) defined meteorological conditions under which initiation, use and termination of low visibility procedures would be made; and

(c) description of ground marking/lighting for use under low visibility procedures.";

(xiv) under subheading "****AD 2.24—*Charts related to an aerodrome*" by deleting paragraphs *(e)* through *(m)* and substituting the following paragraphs:

"*(e)* Aerodrome Terrain and Obstacle Chart—ICAO (Electronic);

(f) Precision Approach Terrain Chart—ICAO for precision approach Categories II and III runways;

(g) Area Chart—ICAO for departure and transit routes;

(h) Standard Departure Chart—Instrument—ICAO;

(i) Area Chart—ICAO for arrival and transit routes;

(j) Standard Arrival Chart—Instrument—ICAO;

(k) Radar ATC Surveillance Minimum Altitude Chart—ICAO;

(l) Instrument Approach Chart—ICAO for each runway and procedure type;

(m) Visual Approach Chart—ICAO; and

(n) bird concentrations in the vicinity of the aerodrome.";

(xv) under subheading "****AD 3.21—*Flight procedures*" by deleting the words "Detailed description of the conditions and flight procedures, including radar procedures, established on the basis of airspace organization established at the heliport." and substituting the following words:

" A detailed description of the conditions and flight procedures, including radar and/or ADS-B procedures, established on the basis of airspace organisation established at the heliport and where established, detailed description of the low visibility procedures at the heliport, including:

(a) touchdown and lift-off (TLOF) area(s) and associated equipment authorized for use under low visibility procedures;

(b) defined meteorological conditions under which initiation, use and termination of low visibility procedures would be made; and

(c) description of ground marking/lighting for use under low visibility procedures."; and

(xvi) under subheading "****AD 3.23—*Charts related to a heliport*" by deleting paragraph *(f)* and substituting the following paragraph:

"*(f)* ATC Surveillance Minimum Altitude Chart—ICAO;";

(c) in clause 3, of Part C by deleting subclause (6) and substituting the following subclause:

" (6) The international exchange of ASHTAM, and NOTAM where the Authority use NOTAM for distribution of information on volcanic activity, shall include volcanic ash advisory centres and the centres designated by regional air navigation agreement for the operation of AFS satellite distribution systems, such as satellite distribution system for information relating to air navigation (SADIS) and international satellite communications system (ISCS), and shall take account of the requirements of long-range operations.";

(d) in Appendix I to Part C, by deleting the table in clause 3*(e)* and substituting the following table:

Level of alert colour code	**Status of activity of Volcano**
GREEN ALERT	Volcano is in normal, non-eruptive state; or, after a change from a higher alert level: Volcanic activity considered to have ceased and volcano reverted to its normal, non-eruptive state.
YELLOW ALERT	Volcano is experiencing signs of elevated unrest above known background levels. or, after a change from higher alert level: Volcanic activity has decreased significantly but continues to be closely monitored for possible renewed increase.
ORANGE ALERT	Volcano is exhibiting heightened unrest with increased likelihood of eruption; or, Volcanic eruption is underway with no or minor ash emission. *[specify ash-plume height if possible].*
RED ALERT	Eruption is forecasted to be imminent with significant emission of ash into the atmosphere likely; or, Eruption is underway with significant emission of ash into the atmosphere *[specify ash-plume height if possible].*

Note—The colour code for the level of alert indicating the status of the volcano and any change from a previous status of activity should be provided to the area control centre by the responsible vulcanological agency in the State concerned, e.g., "RED ALERT FOLLOWING YELLOW" OR "GREEN ALERT FOLLOWING ORANGE";

(e) in Appendix 3 of Part C, by deleting clause 5 and substituting the following item:

"5. Item B

For the date-time group, use a ten-figure group, giving year, month, day, hours and minutes in UTC and this entry shall be the date-time at which the NOTAMN, NOTAMR or NOTAMC comes into force.";

(f) in clause 1(2)*(f)* of Part F, by inserting after the words "PAR, DME, SSR," the words "ADS-B, ADS-C, CPDLC, D-ATIS, D-VOLMET,";

(g) in clause 2*(c)*(xvi) of Part E, by deleting the word "radio" and substituting the word "communication";

(h) in Part H—

(i) in clause 2(7) by deleting the words "Table A-1" and "Table A-2" and substituting the words "Table 1" and "Table 2", respectively;

(ii) in clause 3(4)*(b)* by deleting the words "Figure A8-1 of Appendix 8" and substituting the words "Figure 1 of the Appendix";

(iii) in clause 3(4)*(c)* by deleting the words "Table A8-1 of Appendix 8" and substituting the words "Table 1 of the Appendix";

(iv) in clause 3(6) by deleting the words "Table A8-3 of Appendix 8" and substituting the words "Table 3 of the Appendix";

(v) in clause 4(4) by deleting the words "Figure A-2" and "Table A-2" and substituting the words "Figure 2" and "Table 2", respectively;

(vi) in clause 4(5) by deleting the words "Table A8-4 of Appendix 8" and substituting the words "Table 4 of the Appendix";

(i) by deleting Appendix 8 and substituting the following Appendix:

"APPENDIX 8 – TERRAIN AND OBSTACLE DATA REQUIREMENTS

(Part H of Schedule 2)

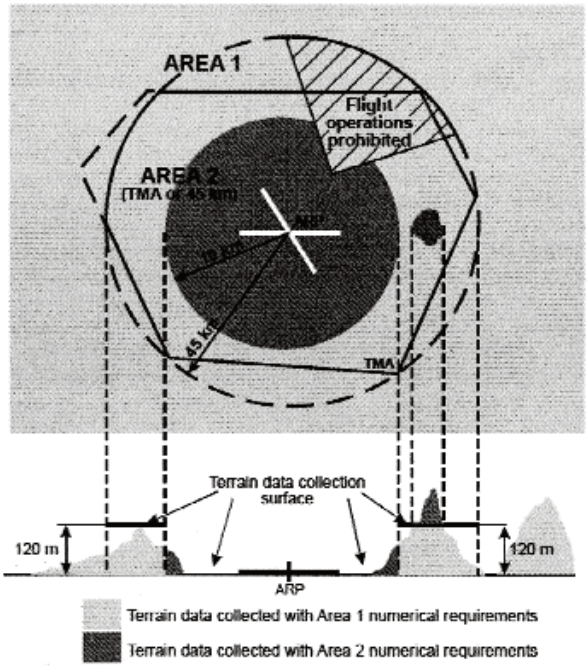


Figure 1. Terrain data collection surfaces – Area 1 and Area 2

1. Within the area covered by a 10 km radius from the ARP, terrain data shall be collected and recorded in accordance with the Area 2 numeric requirements.

2. In the area between 10 km and the TMA boundary or 45 km radius (whichever is smaller), data on terrain that penetrates the horizontal plan 120 m above the lowest runway elevation shall be collected and recorded in accordance with the Area 2 numerical requirements.

3. In the area between 10 km and the TMA boundary or 45 km radius (whichever is smaller), data on terrain that does not penetrate the horizontal plane 120 m above the lowest runway elevation shall be collected and recorded in accordance with the Area 1 numerical requirements.

4. In those portions of Area 2 where flight operations are prohibited due to very high terrain or other local restrictions and/or regulations, terrain data shall only be collected and recorded in accordance with the Area 1 numerical requirements.

Note: Terrain data numerical requirements for Areas 1 and 2 are specified in Table 1of the Appendix

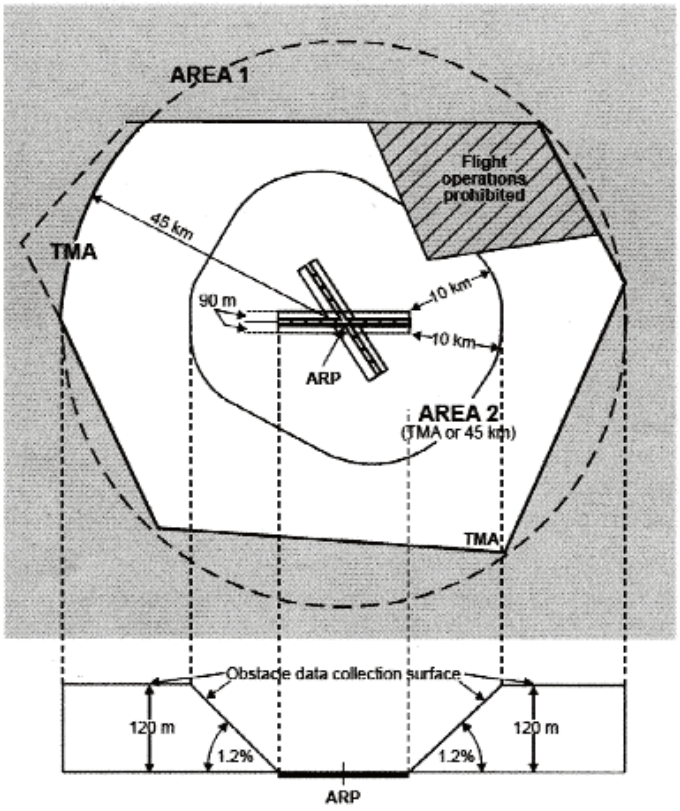


Figure 2. Obstacle data collection surfaces – Area 1 and Area 2

1. Obstacle data shall be collected and recorded in accordance with the Area 2 numerical requirements specified in Table 2 of the Appendix:

(a) any obstacle that penetrates the conical surface whose origin is at the edges of the 180 m wide rectangular area and at the nearest runway elevation measured along the runway centre line, extending at 1.2 per cent slope until it reaches 120 m above the lowest runway elevation of all operational runways at the aerodrome (1.2 per cent slope reaches 120 m at 10 km); in the remainder of Area 2 (between 10 km and the TMA boundary or 45 km radius, whichever is smaller), the horizontal surface 120 m above the lowest runway elevation; and

(b) in those portions of Area 2 where flight operations are prohibited due to very high terrain or other local restrictions and/or regulations, obstacle data shall be collected and recorded in accordance with the Area 1 requirements.

2. Data on every obstacle within Area 1 whose height above the ground is 100 m or higher shall be collected and recorded in the database in accordance with the Area 1 numerical requirements specified in Table 2 of the Appendix.

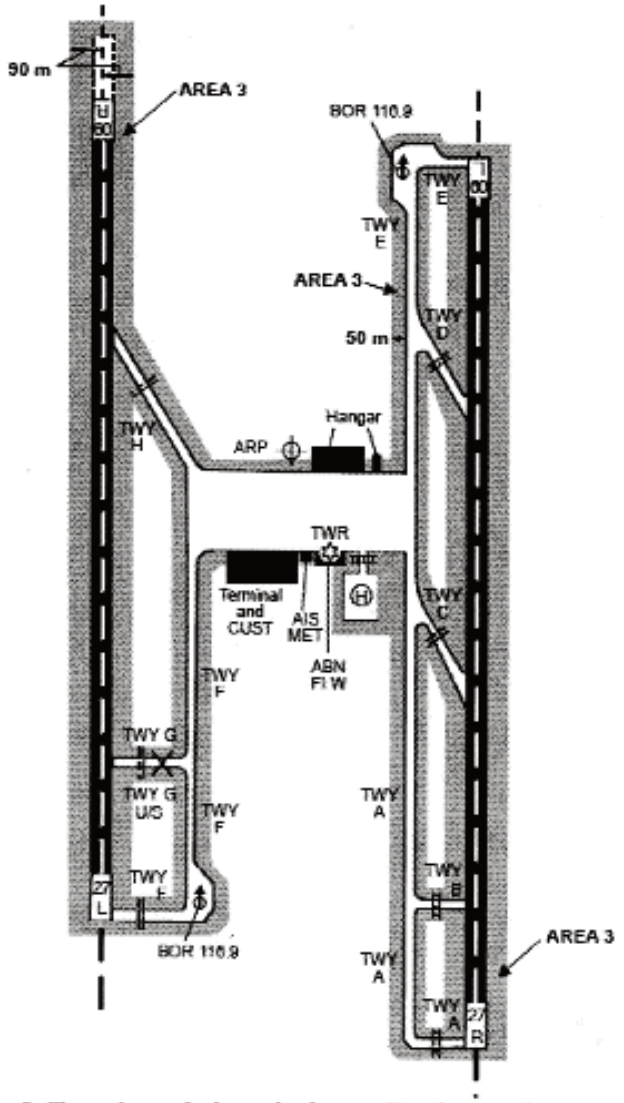


Figure 3. Terrain and obstacle data collection surface – Area 3

1. Data on terrain and obstacles that extend more than a half-metre (0.5 m) above the horizontal plane passing through the nearest point on the aerodrome/heliport movement area shall be collected and recorded.

2. Terrain and obstacle data in Area 3 shall be collected and recorded in accordance with numerical requirements specified in Table 1 and Table 2 of the Appendix, respectively.

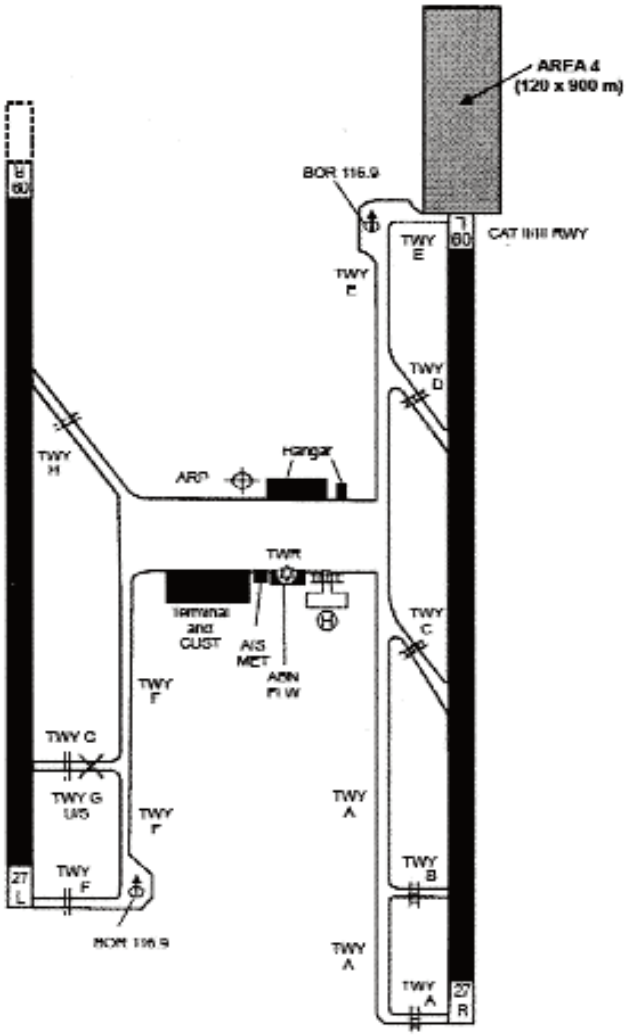


Figure 4. Terrain data collection surface – Area 4

Only terrain data shall be collected and recorded in Area 4 in accordance with the numerical requirements specified in Table 1 of the Appendix.

Table 1 – Terrain data numerical requirements

	Area 1	Area 2	Area 3	Area 4
Post spacing	3 arc seconds (approx. 90 m)	1 arc second (approx. 30 m)	0.6 arc seconds (approx. 20 m)	0.3 arc seconds (approx. 9 m)
Vertical accuracy	30 m	3 m	0.5 m	1 m
Vertical resolution	1 m	0.1 m	0.01 m	0.1 m
Horizontal accuracy	50 m	5 m	0.5 m	2.5 m
Confidence level	90%	90%	90%	90%
Data classification Integrity level	routine 1×10^{-3}	essential 1×10^{-5}	essential 1×10^{-5}	essential 1×10^{-5}
Maintenance period	as required	as required	as required	as required

Table 2 – Obstacle data numerical requirements

	Area 1	Area 2	Area 3
Vertical accuracy	30 m	3 m	0.5 m
Vertical resolution	1 m	0.1 m	0.01 m
Horizontal accuracy	50 m	5 m	0.5 m
Confidence level	90%	90%	90%
Data classification Integrity level	routine 1×10^{-3}	essential 1×10^{-5}	essential 1×10^{-5}
Maintenance period	as required	as required	as required

Table 3 – Terrain attributes

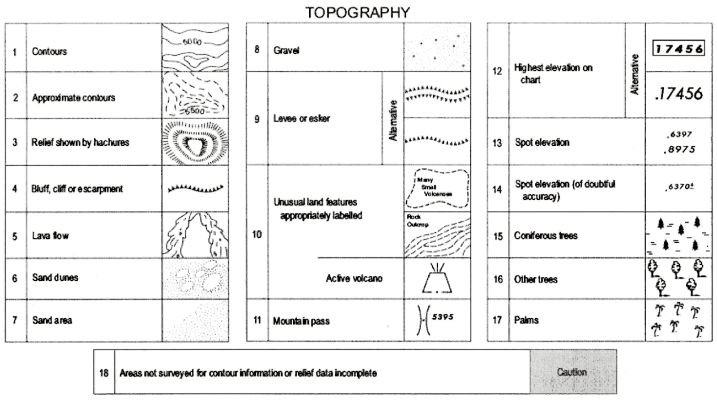
Terrain attribute	*Mandatory/Optional*
Area of coverage	Mandatory
Data originator identifier	Mandatory
Acquisition method	Mandatory
Post spacing	Mandatory
Horizontal reference system	Mandatory
Horizontal resolution	Mandatory
Horizontal accuracy	Mandatory
Horizontal confidence level	Mandatory
Horizontal position	Mandatory
Elevation	Mandatory
Elevation reference	Mandatory
Vertical reference system	Mandatory
Vertical resolution	Mandatory
Vertical accuracy	Mandatory
Vertical confidence level	Mandatory
Surface type	Mandatory
Recorded surface	Mandatory
Penetration level	Optional
Known variations	Optional
Integrity	Mandatory
Date and time stamp	Mandatory
Unit of measurement used	Mandatory

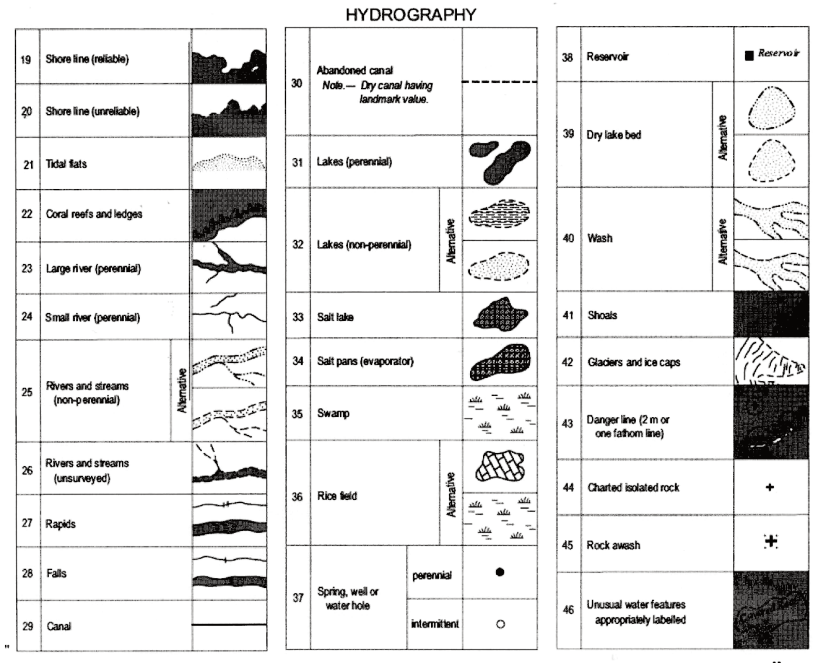
Table 4 – Obstacle attributes

Obstacle attribute	***Mandatory/Optional***
Area of coverage	Mandatory
Data originator identifier	Mandatory
Obstacle identifier	Mandatory
Horizontal accuracy	Mandatory
Horizontal confidence level	Mandatory
Horizontal position	Mandatory
Horizontal resolution	Mandatory
Horizontal extent	Mandatory
Horizontal reference system	Mandatory
Elevation	Mandatory
Vertical accuracy	Mandatory
Vertical confidence level	Mandatory
Elevation reference	Mandatory
Vertical resolution	Mandatory
Vertical reference system	Mandatory
Obstacle type	Mandatory
Geometry type	Mandatory
Integrity	Mandatory
Date and time stamp	Mandatory
Unit of measurement used	Mandatory
Operations	Optional
Effectivity	Optional
Lighting	Mandatory
Marking	Mandatory

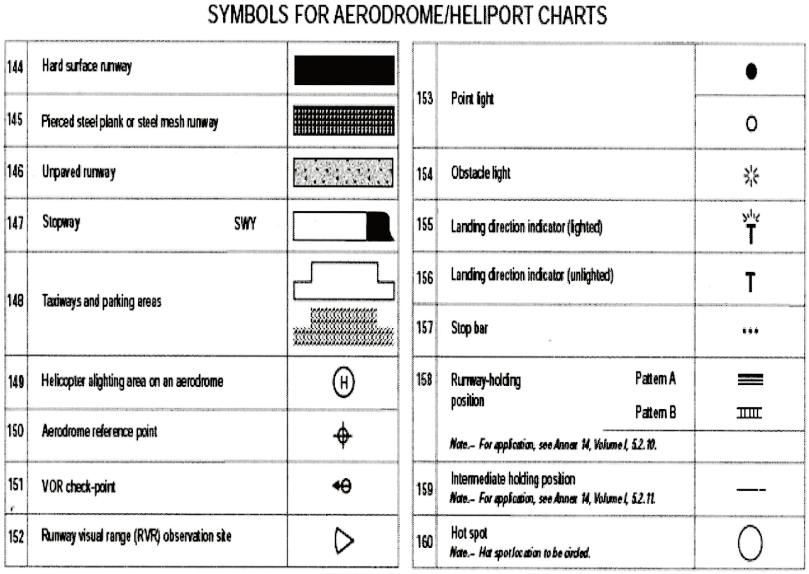
9. Schedule 3 of the Regulations is amended— Schedule 3 amended

(a) in Appendix 2 of Part A by inserting before the chart entitled "CULTURE" the following charts:





(b) in Appendix 2 of Part A by deleting the chart entitled "SYMBOLS FOR AERODROME/HELIPORT CHARTS"and substituting the following chart:



(c) in Appendix 3 of Part A by inserting after Table 5 the following Table:

"Table 6. Gradient and angles

Type of gradient/angle	Chart resolution	Integrity Classification
Non-precision final approach and descent gradient	0.1 percent	1×10^{-8} Critical
Final approach descent angle (Non-precision approach or approach with vertical guidance)	0.1 degree	1×10^{-8} Critical
Precision approach glide path/elevation angle	0.1 degree	1×10^{-8} Critical ";

(d) in Part C by—

(i) renumbering clauses 7 and 8 as clauses 8 and 9, respectively;

(ii) deleting clause 6 and substituting the following clauses:

" 6. All aerodromes used for international civil aviation to which an instrument approach can be made shall be shown.

Aeronautical Data for Prohibited, Restricted and Danger Areas

7. Prohibited, restricted and danger areas relevant to the layer of airspace shall be depicted with their identification and vertical limits.";

(iii) in clause 8(2)*(j)* as renumbered by deleting the words "flight altitudes" and substituting the words "minimum *enroute* altitudes and minimum obstacle clearance altitudes"; and

(iv) by deleting clause 8(2)*(k)* as renumbered and substituting the following paragraph:

"*(k)* communication facilities listed with their channels and, where applicable, log on address; and";

(e) in Part D—

(i) in clause 10*(k)* by deleting the words "flight altitudes" and substituting the words "minimum *en route* altitudes and minimum obstacle clearance altitudes";

(ii) in clause 10*(l)* by deleting the words "radar minimum" and substituting the words "minimum vectoring"; and

(iii) by deleting clause 10*(n)* and substituting the following paragraph:

"*(n)* communication facilities listed with their channels and, if applicable, log on address.";

(f) in Part E—

(i) by deleting clause 7(3);

(ii) by renumbering clauses 8 and 9 as clauses 9 and 10, respectivley;

(iii) by inserting after clause 7 the following clause:

"Aeronautical Data for Prohibited, Restricted and Danger Areas

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

(iv) in subparagraph 10(1)*(a)*(v) as renumbered, by deleting the words "flight altitudes" and substituting the words "obstacle clearance altitudes";

(v) in subparagraph 10(1)*(a)*(vi) as renumbered, by deleting the word "radar" in two places where it occurs and substituting the word "vectoring" after the word "minimum"; and

(vi) by inserting after clause 10 as renumbered, the following clause:

"Aeronautical Database Requirements

11. Appropriate data provided by the procedures specialist to support navigation database coding shall be published in accordance with the Procedures for Air Navigation Services—Aircraft Operations (Doc. 8168), Volume II, Section 5, Chap. 2, 2.1 on the verso of the chart or as a separate, properly reference sheet.";

(g) in Part F—

(i) in clause 7(2) by deleting the word "symbols";

(ii) by deleting clause 7(3);

(iii) by renumbering clauses 8 and 9 as clauses 9 and 10, respectively;

(iv) by inserting after clause 7, the following clause:

"Aeronautical Data for Prohibited, Restricted and Danger Areas

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

(v) in subparagraph 10*(a)*(v) as renumbered, by deleting the words "flight altitudes" and substituting the words "obstacle clearance altitudes";

(vi) in subparagraph 10*(a)*(vi) as renumbered, by deleting the word "radar" wherever it occurs and substituting the word "vectoring" after the word "minimum"; and

(vii) by inserting after clause 10 as renumbered, the following clause:

"Aeronautical Database Requirements

11. Appropriate data provided by the procedures specialist to support navigation database coding shall be published in accordance with the Procedures for Air Navigation Services—Aircraft Operations (Doc. 8168), Volume II, Section 5, Chap. 2, 2.2 on the verso of the chart or as a separate, properly reference sheet.";

(h) in Part G—

(i) by deleting clause 10(3) and substituting the following subclause:

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

(ii) by deleting clause 14(4) and substituting the following subclause:

" (4) For non-precision approach procedures with a final approach fix, the final approach descent gradient to the nearest one-tenth of a per cent and, in parenthesis, descent angle to the nearest one-tenth of a degree shall be shown.";

(iii) by deleting clause 14(5) and substituting the following subclause:

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

(iv) by deleting clause 14(9) and all the words thereafter in Part G and substituting the following subclauses:

" (9) Where the final approach descent gradient/angle for any type of instrument approach procedure exceeds the maximum value specified in the *Procedures for Air Navigation Services-Aircraft Operations* (PANS-OPS, Doc. 8168), Volume II, Part I, Section IV, Chap. 5, a cautionary note shall be included.

Aeronautical Database Requirements

10. Appropriate data provided by a procedures specialist to support navigation database coding shall be published in accordance with the Procedures for Air Navigation Services—Aircraft Operations (Doc. 8168), Volume II, Section 5, Chap. 2, 2.2 on the verso of the chart or as a separate, properly reference sheet.";

(i) in Part H after clause 12 by deleting the words:

"**AERODROME/HELIPORT CHART—ICAO**

(Regulation 37)"

and substituting the following words:

"PART I

(Regulation 37)

AERODROME/HELIPORT CHART—ICAO";

(j) in Part I—

(i) in clause 4(1)*(g)* by inserting after the words "including runway-holding position and" the words ", where established, intermediate holding positions,";

(ii) by deleting clause 4(1)*(n)* and substituting the following paragraph:

"*(n)* relevant communication facilities listed with their channels and, where applicable, log on address;"; and

(iii) by deleting clause 4(1)*(q)* and *(r)* and substituting the following paragraphs:

"*(q)* VOR checkpoint and radio frequency of the aid concerned;

(r) any part of the depicted movement area permanently unsuitable for aircraft, clearly identified as such; and

(s) where established, hot spot locations with additional information properly annoted in tabular form on the face or verso of the chart.";

(k) by inserting after Part I the following Parts:

"PART J

(Regulation 37A)

AERONAUTICAL CHART—ICAO 1:500 000

The Standards required for Aeronautical Chart—ICAO 1:500 000 are as follows:

Scale

1. (1) Linear scales for kilometres and nautical miles arranged in the following order:

(a) kilometres; and

(b) nautical miles,

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

(2) A conversion scale (metres or feet) shall be shown in the margin.

Format

2. (1) The title and marginal notes shall be in the English Language.

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

Projection

3. (1) A conformal or orthomorphic projection shall be used.

(2) Parallels shall be shown at intervals of thirty minutes.

(3) Meridians shall normally be shown at intervals of thirty minutes.

(4) Graduation marks shall be shown at one minute intervals along each whole degree meridian and parallel, extending away from the Greenwich Meridian and from the Equator and each ten minute interval shall be shown by a mark on both sides of the graticule line.

(5) All meridians and parallels shown shall be numbered in the borders of the chart.

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

Identification

4. Each sheet shall be identified by a name which should be that of the principal town or of a main geographical feature appearing on the sheet.

Culture and Topography

5. (1) In built-up areas, cities, towns and villages shall be selected and shown on the chart according to their relative importance to visual air navigation.

(2) All railroads having landmark value shall be shown on the chart.

Note 1: In congested areas, some railroads may be omitted in the interest of legibility.

Note 2: Railroads may be named.

Note 3: Rail stations may be shown.

(3) Tunnels shall be shown on the chart when they serve as prominent landmarks.

Note: A descriptive note may be added, if necessary to accentuate this feature.

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

Note 1: Roads under construction may be shown.

Note 2: The number or names of important highways may be shown.

(5) Natural and cultural landmarks such as bridges, mine structure, lookout towers, forts, ruins, levees, pipelines, prominent transmission lines, permanent cable car installations, and rocks, bluffs, cliffs, and dunes, isolated lighthouses and lightships when considered to be of importance for visual air navigation shall be shown on the chart.

Note: Descriptive notes may be added.

(6) International boundaries shall be shown on the chart and undemarcated or undefined boundaries shall be distinguished by descriptive notes.

Note: Other boundaries may be shown.

(7) Hydrograph information such as water features compatible with the scale of the chart comprising shore lines, lakes, rivers and streams including those that are non-perennial in nature, salt lakes, glaciers and ice caps shall be shown on the chart.

(8) Contours shall be shown on the chart with the selection of intervals governed by the requirement to depict clearly the relief features required in air navigation.

(9) The values of the contours used shall be shown on the chart.

(10) When hypsometric tints are used, the range of elevations for the tints shall be shown on the chart and the scale used shown in the margin.

(11) Spot elevations shall be shown on the chart at selected critical points.

(12) The elevation selected in subclause (11) shall always be the highest in the immediate vicinity and shall generally indicate the top of a peak and ridge.

(13) Elevations in valleys and at lake surface levels which are of navigational value shall be shown on the chart.

(14) The position of each selected elevation shall be indicated by a dot on the chart.

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

(16) Areas on the chart that have not been surveyed for contour information shall be labelled "Relief data incomplete".

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

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

(18) Wooded areas shall be shown with the approximate northern or southern limits of tree growth indicated by a dashed black line and appropriately labelled.

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

Magnetic Variation

8. (1) Isogonic lines shall be shown on the chart.

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

Aeronautical Data

9. (1) Aeronautical information shall be shown consistent with the use of the chart and the revision cycle.

(2) Land and water aerodromes and heliports shall be shown with their names, to the extent that they do not produce undesirable congestion on the chart, priority being given to those of greatest aeronautical significance.

(3) The aerodrome elevation, the lighting available, the type of runway surface and the length of the longest runway or channel, shown in abbreviated form for each aerodrome in conformity with the example given in Appendix 2, provided they do not cause undesirable clutter on the chart, shall be indicated.

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

(5) Objects of a height of 300 feet and more above ground shall be shown as obstacles on the chart.

(6) When considered of importance to visual flight, prominent transmission lines and permanent cable car installations, which are obstacles, shall be shown on the chart.

(7) Prohibited, restricted and danger areas shall be shown on the chart.

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

(9) Where appropriate, the air defence identification zone (ADIZ) shall be shown and properly identified on the chart.

(10) Radio navigation aids shall be shown on the chart by the appropriate symbol and named, but excluding their frequences, coded designators, times of operation and other characteristics unless any or all of this information which is shown is kept up to date by means of new editions of the chart.

(11) Aeronautical ground lights together with their characteristics or their identifications or both shall be shown on the chart.

(12) Marine lights on outer prominent coastal or isolated features of not less than 28 kilometres or 15 nautical miles visibility range shall be shown on the chart—

(a) where they are not less distinguishable than more powerful marine lights in the vicinity;

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

(c) where they are the only lights of significance available.

PART K

(Regulation 37B)

AERODROME TERRAIN AND OBSTACLE CHARTS—ICAO (ELECTRONIC)

The Standards required for Aerodrome Terrain and Obstacle Charts—ICAO (Electronic) are as follows:

Function

1. The function of the Aerodrome Terrain and Obstacle Charts—ICAO (Electronic) shall be to portray the terrain and obstacle data in combination with aeronautical data, as appropriate, necessary to—

(a) enable an operator to comply with the aircraft performance operating limitations by developing

contingency procedures for use in the event of an emergency during a missed approach or take-off, and by performing aircraft operating limitations analysis; and

(b) support the following air navigation applications:

(i) instrument procedure design including circling procedure;

(ii) aerodrome obstacle restriction and removal; and

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

Availability

2. Aerodrome Terrain and Obstacle Charts—ICAO (Electronic) shall—

(a) be made available for all aerodromes regularly used by international civil aviation from 18th November, 2010;

(b) be made available in hard copy format upon request;

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

Note: The use of ISO 19100 series of standards for geographic information supports the interchange and use of the Aerodrome Terrain and Obstacle Chart—ICAO (Electronic) among different users.

Identification

3. Aerodrome Terrain and Obstacle Charts—ICAO (Electronic) shall be identified by—

(a) the name of the country in which the aerodrome is located;

(b) the name of the city or town which the aerodrome serves; and

(c) the name of the aerodrome.

Chart Coverage

4. The extent of each Aerodrome Terrain and Obstacle Charts—ICAO (Electronic) shall be sufficient to cover Area 2 as specified in Clause 2 of Part H of Schedule 3 in the Regulations.

Chart Content

5. (1) Where computer graphic applications are being developed to portray features on the Aerodrome Terrain and Obstacle Charts—ICAO (Electronic), the relationships between features, feature attributes, and the underlying spatial geometry and associated topological relationships shall be specified by an application schema.

(2) Portrayed information on the Aerodrome Terrain and Obstacle Charts—ICAO (Electronic) shall be provided on the basis of portrayal specifications applied according to defined portrayal rules.

(3) Portrayal specifications and portrayal rules shall not be part of the data set of the Aerodrome Terrain and Obstacle Charts—ICAO (Electronic).

(4) Portrayal rules of the Aerodrome Terrain and Obstacle Charts—ICAO (Electronic) shall be stored in a portrayal catalogue which shall make reference to separately-stored portrayal specifications.

Note: ISO Standards 19117 contains a definition of the schema describing the portrayal mechanism of feature-based geographic information, ISO Standards 19109 contains rules for application schema and ISO Standards 19107 defines spatial geometry and associated topographical relationships.

(5) Symbols used to portray features on the Aerodrome Terrain and Obstacle Charts—ICAO (Electronic) shall be in accordance with Clause 4 of Part A of Schedule 3 in the regulations and Appendix 2 of Part A of Schedule 3 in the Regulations.

6. (1) The terrain feature, and associated attributes, to be portrayed and database linked to the Aerodrome Terrain and Obstacle Charts—ICAO (Electronic) shall be based on the electronic terrain data sets which satisfy the requirements of Part H of Schedule 2 of the Regulations.

(2) The terrain feature on the Aerodrome Terrain and Obstacle Charts—ICAO (Electronic) shall be portrayed in a manner that provides an effective general impression of a terrain.

(3) The portrayal of the terrain features on the Aerodrome Terrain and Obstacle Charts—ICAO (Electronic) shall be a presentation of terrain surface by con-

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

7. The portrayed terrain feature of the Aerodrome Terrain and Obstacle Charts—ICAO (Electronic) shall be linked to the following associated attributes in the database:

(a) horizantal positions of grid points in geographic co-ordinates and elevations of the points;

(b) surface type;

(c) contour line values, where provided; and

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

8. (1) Obstacle features, and associated attributes, portrayed or database linked to the Aerodrome Terrain and Obstacle Charts—ICAO (Electronic) shall be based on electronic obstacle data sets which satisfy the requirements of Part H of Schedule 2 of the Regulations.

(2) Each obstacle shall be portrayed by an appropriate symbol and obstacle identifier on the Aerodrome Terrain and Obstacle Charts—ICAO (Electronic).

(3) The portrayed obstacle feature of the Aerodrome Terrain and Obstacle Charts—ICAO (Electronic) shall be linked to the following associated attributes in the database:

(a) horizontal position in geographic co-ordinates and associated elevation;

(b) obstacle type; and

(c) obstacle extent, where appropriate.

9. (1) Aerodrome features, and associated attributes, portrayed and databse linked to the Aerodrome Terrain Obstacle Charts—ICAO (Electronic) shall be based on aerodrome data which satisfy the requirements of Annex 14, Volume I, Appendix 5 and the Appendix to Part A of Schedule 2 of the Regulations.

(2) The following aerodrome features of the Aerodrome Terrain and Obstacle Charts—ICAO (Electronic) shall be portrayed by an appropriate symbol:

(a) aerodrome reference point;

(b) runways, with designation numbers, and where available, stopways and clearways; and

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

(3) The portrayed aerodrome feature of the Aerodrome Terrain Obstacle Charts—ICAO (Electronic) shall be linked to the following associated attributes in the database:

(a) geographical co-ordinates of the aerodrome reference point;

(b) aerodrome magnetic variation, year of information and annual change;

Note: Magnetic variation may be database linked to the aerodrome reference point.

(c) length and width of runways, stopways and clearways;

(d) type of surface of runways and stopways;

(e) magnetic bearings of the runways to the nearest degree;

(f) elevations at each end of the runway(s), stopways and clearays, and at each significant change in slope of runways and stopways; and

(g) declared distances for each runway direction, or the abbreviation "NU" where a runway direction cannot be used for a take-off or landing or both.

10. Each radio navigation aid feature located within the chart coverage shall be portrayed by an appropriate symbol.

Note: Navigation aid feature attributes may be linked to the portrayed navigation aid features in the databases.

Accuracy and resolution

11. (1) The order of accuracy of aeronautical data shall be as specified in Appendix 5, Part A, Schedule 1 of the Regulations and Annex 14, Volume I, Appendix 5 and Volume II, Appendix 1.

(2) The order of accuracy of terrain and obstacle data shall be as specified in Part H of Schedule 2 in the Regulations.

(3) The aeronautical data resolution shall be as specified in the Appendix to Part A of Schedule 2 in the Regulations while the resolution for terrain and obstacle data shall be as specified in the Appendix to Part H of Schedule 2 in the Regulations.

Electronic functionality

12. (1) It shall be possible to vary the scale at which the chart is viewed so that symbols and text size vary with chart scale to enhance readability.

(2) Information on the chart shall be geo-referenced, and it shall be possible to determine cursor position to at least the nearest second.

(3) The chart shall be compatible with widely available desktop computer hardware, software and media.

(4) It shall not be possible to add or remove information from the chart without an authorized update.

(5) To avoid clutter of information and where the details necessary to support the function of the chart cannot be shown with sufficient clarity on a single comprehensive chart view, selectable information layers shall be provided to allow for the customized combination of information.

Note: An electric chart format with user-selectable information layers is the preferred method of presentation for most aerodrome features.

(6) It shall be possible to print the chart in hard copy format according to the content specifications and scale determined by the user.

Note 1: Printed output may be "tiled" sheets or specific selected areas according to user requirements.

Note 2: Feature attribute information available through database link may be supplied separately on appropriately reference sheets.

Chart data product specifications

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

(2) The chart data product specifications shall include an overview, a specification scope, a data product identification, data content information, the reference systems used, the data quality requirements and information on data capture, data maintenance, data

portrayal, data product delivery, as well as any additional information available and metadata.

Note: ISO Standard 19131 specifies the requirements and outline of data product specifications for geographic information.

(3) The overview of the chart data product specifications shall provide an informal description of the product and shall contain general information about the data product.

(4) The specification scope of the chart data product specifications shall contain the spatial (horizontal) extent of the chart coverage.

(5) The chart data product identification shall incluse the title of the product, a brief narrative summary of the content and purpose, and a description of the geographic area covered by the chart.

(6) The data content of the chart data product specifications shall clearly identify the type of coverage or imagery and shall provide a narrative description of each.

Note: ISO Standard 19123 contains schema for coverage geometry and functions.

(7) The chart data product specifications shall include information that defines the reference systems used.

(8) The reference system referred to in subclause (7) shall include the spatial reference system (horizontal and vertical) and, where appropriate, temporal reference system.

(9) The chart data product specifications shall identify the data quality requirement and include a statement on acceptable conformance quality levels and corresponding data quality measures covering all the data quality elements and data quality sub-elements, even if only to state that a specific data quality element or sub-element is not applicable.

Note: ISO Standard 19113 contains quality principles for geographic information and ISO Standard 19114 covers quality evaluation procedures.

(10) The chart data product specifications shall include a data capture statement which shall be a general description of the sources and of processes applied for the capture of chart data.

(11) The principles and criteria applied in the maintenance of the chart shall also be provided in the

chart data product specifications, including the frequency with which the chart product is updated, particularly the maintenance information of obstacle data sets included on the chart and an indication of the principles, methods and criteria applied for obstacle data maintenance.

(12) The chart data product specifications shall contain—

(a) information on how data are portrayed on the chart, as detailed in clause 5; and

(b) data product delivery information including delivery formats and delivery medium information.

(13) The core chart metadata elements shall be included in the chart data product specifications and additional metadata items required to be supplied shall be stated in the product specifications together with the format and encoding of the metadata.

Note 1: ISO Standard 19115 specifies requirements for geographic information metadata.

Note 2: The chart data product specifications document in the chart data product which is implemented as a data set which is described by metadata.

Made by the Civil Aviation Authority this 27th day of March, 2008.

R. LUTCHMEDIAL
Civil Aviation Authority

Approved by the Minister of Works and Transport this 27th day of March, 2008.

C. IMBERT
Minister of Works and Transport

Laid in the House of Representatives this 11th day of April, 2008.

N. JAGGASSAR
Acting Clerk of the House

Laid in the Senate this 15th day of April, 2008.

J. SANDY
Acting Clerk of the Senate

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