LEGAL NOTICE NO. 261

REPUBLIC OF TRINIDAD AND TOBAGO

THE CIVIL AVIATION ACT, CHAP. 49:03

REGULATIONS

MADE BY THE AUTHORITY WITH THE APPROVAL OF THE MINISTER UNDER SECTION 33 OF THE CIVIL AVIATION ACT AND SUBJECT TO NEGATIVE RESOLUTION OF PARLIAMENT

THE CIVIL AVIATION [(NO. 15) AIR NAVIGATION SERVICES] (AMENDMENT) REGULATIONS, 2011

Citation

1. These Regulations may be cited as the Civil Aviation [(No. 15) Air Navigation Services] (Amendment) Regulations, 2011.

Interpretation

2. In these Regulations, "Regulations" means the Civil Aviation [(No. 15) Air Navigation Services] Regulations, Chap. 49:03.

Regulation 2 amended

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

(a) by deleting the definition of "navigation specification" and inserting the following definition:

" "navigation specification" means a set of aircraft and flight crew requirements needed to support performance-based navigation operations within a defined airspace and is of two kind as follows:

(a) required navigation performance specification which is a navigation specification based on area navigation that includes the requirement for performance monitoring and alerting, designated by the prefix RNP such as RNP 4, RNP APCH; and

(b) area navigation (RNAV) specification which is a navigation specification based on area navigation that does not include the requirement for performance monitoring and alerting, designated by the prefix RNAV such as RNAV 5, RNAV 1;";

(b) by deleting the definition of "helicopter stand" and substituting the following definition:

" "helicopter stand" means an aircraft stand which provides for parking a helicopter and where ground taxi operations are completed or where the helicopter touches down and lifts off for air taxi operations;";

(c) by deleting the definition of "obstacle" and substituting the following definition:

" "obstacle" means all temporary or permanent fixed and mobile objects, or parts thereof, that—

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

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

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

(d) by deleting the definition of "air transit route" and substituting the following definition:

" "air transit route" means a defined route for the air transiting of helicopters;";

(e) by deleting the definition of "air taxiway";

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

" "significant point" means a specified geographical location used in defining an air traffic service route or the flight path of an aircraft and for other navigation and air traffic service purposes;"

"State safety programme" means an integrated set of regulations and acitvities aimed at improving safety;

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

(g) in the definition of "radio navigation service" by inserting after the words "service providing" the word "guidance".

Regulation 5 amended

4. Regulation 5 of the Regulations is amended by deleting paragraph *(a)* and substituting the following paragraph:

"*(a)* establish a State safety programme to achieve an acceptable level of safety in the civil aviation;".

Regulation 19 amended

5. Regulation 19 of the Regulations is amended—

(a) by deleting subregulation (1) and subsituting the following subregulation:

" (1) The Director General shall ensure that quality management systems are implemented and maintained encompassing all functions of an aeronautical information service as specified in clause 2(3) in Part A of the Schedule 2.".

(b) in subregulation (4), by—

(i) inserting after the words "Director General shall ensure" the words ", within the context of the established quality management system,"; and

(ii) deleting paragraph *(e)* and substituting the following paragraph:

"*(e)* each quality management system includes the necessary policies, processes and procedures, including those for the use of metadata, to ensure and verify aeronautical data is traceable throughout the aeronautical information data chain so as to allow any data anomalies or errors detected in use to be identified by root cause, corrected and communicate to affected users.".

Schedule 1 amended

6. Schedule 1 of the Regulations is amended in Part A—

(a) in clause 9, by inserting after the words "an ATS route" the words "or instrument approach procedure";

(b) in clause 21—

(i) in subclause (1), by deleting paragraph *(b)* and substituting the following paragraph:

"*(b)* ensures the implementation of remedial action necessary to maintain agreed safety performance;";

(ii) in paragraph (1)*(c)*, by deleting the words "level achieved" and substituting the word "performance"; and

(iii) by deleting paragraph (1)*(d)* and substituting the following paragraph:

"*(d)* aims at a continuous improvement of the overall performance of the safety management system."; and

(iv) in subclause (2), by inserting after the words "senior management" the words "as set out in Appendix 6";

(c) in Appendix 2—

(i) in clause 3—

(A) in subclause (1), by deleting the words ", the significant point" and substituting the words "and is used for ATC purposes, it";

(B) in subclause (4), by inserting after the words "(4) The" the words "unique five-letter pronounceable"; and

(C) by inserting after subclause (8), the following subclause:

" (9) The requirements of the Authority for unique five-letter pronounceable name-code designator shall be notified to the Regional Office of ICAO for coordination.";

(d) by inserting after Appendix 5, the following Appendix:

"APPENDIX 6

FRAMEWORK FOR SAFETY MANAGEMENT SYSTEMS (SMS)

[Clause 21(2)]

This appendix specifies the framework for the implementation and maintenance of a Safety Management System (SMS) by an air traffic services provider. An SMS is a management system for the management of safety by an organization. The framework includes four components and twelve elements representing the minimum requirements for SMS implementation.

The implementation of the framework shall be commensurate with the size of the organization and the complexity of the services provided. This appendix also includes a brief description of each element of the framework.

The following are the minimum standards for an Operator Safety Management System:

General

This specifies the framework for the implementation and maintenance of a Safety Management System (SMS) by an operator. An SMS is a management system for the management of safety by an organization. The framework includes four components and twelve elements representing the minimum requirements for SMS implementation.

The implementation of the framework shall be commensurate with the size of the organization and the complexity of the services provided. A brief description of each element of the framework is also included.

Contents

1. Safety policy and objectives

(a) Management commitment and responsibility

The operator shall define the organization's safety policy which shall be in accordance with international and national requirements, and which shall be signed by the accountable executive of the organization. The safety policy shall reflect organizational commitments regarding safety; shall include a clear statement about the provision of the necessary resources for the implementation of the safety policy; and shall be communicated, with visible endorsement, throughout the organization. The safety policy shall include the safety reporting procedures; shall clearly indicate which types of operational behaviours are unacceptable; and shall include the conditions under which disciplinary action would not apply. The safety policy shall be periodically reviewed to ensure it remains relevant and appropriate to the organization.

(b) Safety accountabilities

The operator shall identify the accountable executive who, irrespective of other functions, shall have ultimate responsibility and accountability, on behalf of the operator, for the implementation and maintenance of the SMS. The operator shall also identify the accountabilities of all members of management, irrespective of other functions, as well as of employees, with respect to the safety performance of the SMS. Safety responsibilities, accountabilities and authorities shall be documented and communicated throughout the organization, and shall include a definition of the levels of management with authority to make decisions regarding safety risk tolerability.

(c) Appointment of key safety personnel

The operator shall identify a safety manager to be the responsible individual and focal point for the implementation and maintenance of an effective SMS.

(d) Coordination of emergency response planning

The operator shall ensure that an emergency response plan that provides for the orderly and efficient transition from normal to emergency operations and the return to normal operations is properly coordinated with the emergency response plans of those organizations it must interface with during the provision of its services.

(e) SMS documentation

The operator shall develop an SMS implementation plan, endorsed by senior management of the organization that defines the organization's approach to the management of safety in a manner

that meets the organization's safety objectives. The operator shall develop and maintain SMS documentation describing the safety policy and objectives, the SMS requirements, the SMS processes and procedures, the accountabilities, responsibilities and authorities for processes and procedures, and the SMS outputs.

Also as part of the SMS documentation, the operator shall develop and maintain a Safety Management System Manual (SMSM), to communicate its approach to the management of safety throughout the organization.

2. Safety risk management

(a) Hazard identification

The operator shall develop and maintain a formal process that ensures that hazards in operations are identified. Hazard identification shall be based on a combination of reactive, proactive and predictive methods of safety data collection.

(b) Safety risk assessment and mitigation

The operator shall develop and maintain a formal process that ensures analysis, assessment and control of the safety risks in training operations.

3. Safety assurance

(a) Safety performance monitoring and measurement

The operator shall develop and maintain the means to verify the safety performance of the organization and to validate the effectiveness of safety risk controls. The safety performance of the organization shall be verified in reference to the safety performance indicators and safety performance targets of the SMS.

(b) The management of change

The operator shall develop and maintain a formal process to identify changes within the organization which may affect established processes and services; to describe the arrangements to ensure safety performance before implementing changes; and to eliminate or modify safety risk controls that are no longer needed or effective due to changes in the operational environment.

(c) Continuous improvement of the SMS

The operator shall develop and maintain a formal process to identify the causes of substandard performance of the SMS, determine the implications of substandard performance of the SMS in operations, and eliminate or mitigate such causes.

4. Safety promotion

(a) Training and education

The operator shall develop and maintain a safety training programme that ensures that personnel are trained and competent to perform the SMS duties. The scope of the safety training shall be appropriate to each individual's involvement in the SMS.

(b) Safety communication

The operator shall develop and maintain formal means for safety communication that ensures that all personnel are fully aware of the SMS, conveys safety-critical information, and explains why particular safety actions are taken and why safety procedures are introduced or changed.".

Schedule 2 revoked and substituted

7. The Regulations are amended by revoking Schedule 2 and substituting the following Schedule:

"SCHEDULE 2

(Regulation 13)

PART A

General

Responsibilities and functions

The following are the standards required to be met by the Authority in providing Aeronautical Information Services:

1. (1) Except in circumstances where aeronautical information service is provided to an aircraft in flight in the area of responsibility of the aeronautical information service on a continuous basis, the minimum period for the provision of aeronautical information service to an aricraft in flight in the area of responsibility of the information flight service shall be for at least two hours before the flight and throughout the entire flight until two hours after the flight has ended.

(2) Aeronautical information services under subclause (3) shall also be made available at such other time as may be requested by an appropriate ground organization.

(3) Any aeronautical information and aeronautical data provided by aeronautical information services that is necessary for the safety, regularity or efficiency of air navigation shall be made available—

(a) promptly to the aeronautical information service of other Contracting States; and

(b) in a form suitable for the operational requirements of—

(i) persons involved in flight operations, including flight crews, flight planning and flight simulators; and

(ii) the air traffic services unit responsible for flight information service and the services responsible for pre-flight information.

(4) An aeronautical information service shall—

(a) receive;

(b) generate;

(c) collate or assemble;

(d) edit;

(e) format;

(f) publish; and

(g) distribute aeronautical information and aeronautical data concerning the entire territory of Trinidad and Tobago as well as areas in which the Authority is responsible for air traffic services outside the territory of Trindad and Tobago.

(5) All aeronautical information shall be published as an Integrated Aeronautical Information Package.

Quality Management System

2. (1) The established quality management system shall provide users with the necessary assurance and confidence that distributed aeronautical information and data satisfy the aeronautical data quality requirements for accuracy, resolution and integrity as specified in the Appendix and the data traceability requirements through the provision of appropriate metadata as specified in clause 9.

(2) The system shall also provide assurance of the applicability period of intended use of aeronautical data as well as that the agreed distribution dates will be met.

(3) All necessary measures shall be taken to monitor compliance with the quality management system in place.

(4) The order of accuracy for aeronautical data, based upon a ninety-five per cent confidence level, shall be as specified in Part A of Schedule 1 and Chapter 2, Annex 14 of the ICAO.

(5) In determining the order of accuracy for aeronautical data, the three types of positional data shall be identified as follows:

(a) surveyed points such as runway thresholds, navigation aid positions, etc.; and

(b) calculated points based on mathematical calculations from the known surveyed points of points in space and fixes and declared points such as flight information region boundary points.

(6) The order of publication resolution of aeronautical data shall be that as specified in the Appendix to this Part.

(7) The integrity of aeronautical data is maintained throughout the data process from survey and origin to distribution to the next intended user.

(8) Aeronautical data integrity requirements shall be based upon the potential risk resulting from the corruption of data and upon the use to which the data item is put.

(9) Further to the requirements in subclause (7), the following classifications and data integrity levels shall apply:

(a) critical data, integrity level 1 x 10-8: there is a high probability when using corrupted critical data that the continued safe flight and landing of an aircraft would be severely at risk with the potential for catastrophe;

(b) essential data, integrity level 1 x 10-5: there is a low probability when using corrupted essential data that the continued safe flight and landing of an aircraft would be severely at risk with the potential for catastrophe; and

(c) routine data, integrity level 1 x 10-3: there is a very low probability when using corrupted routine data that the continued safe flight and landing of an aircraft would be severely at risk with the potential for catastrophe.

(10) Aeronautical data quality requirements related to classification and data integrity shall be as provided in Tables A-1 through A-5 of the Appendix to this Part.

(11) Electronic aeronautical data sets shall be protected by the inclusion in the data sets of a 32-bit cyclic redundancy check implemented by the application dealing with the data sets.

(12) Subclause (11) shall apply to the protection of all integrity levels of data sets specified in subclause (9).

(13) The material to be issued as part of the Integrated Aeronautical Information Package shall be thoroughly checked and coordinated with the services responsible before it is submitted to the aeronautical information service, in order to make certain that all necessary information has been included and that it is correct in detail prior to distribution.

(14) Validation and verification procedures shall be established to ensure that quality requirements including accuracy, resolution, integrity and traceability of aeronautical data are met.

NOTE*: Guidance material on liaison with other related services is contained in the Aeronautical Services Manual ICAO Doc 8126.*

(15) An audit shall be conducted of the quality management system applied to evaluate the degree at compliance with standards prescribed in this clause.

(16) Where nonconformity is identified, corrective action shall be determined and applied.

(17) All audit observations and remedial actions shall be evidenced and properly documented.

NOTE: *Guidance material on the aeronautical data requirements (accuracy, resolution, integrity and traceability) is contained in ICAO Doc 9684 (WGS 84) Manual.*

Exchange of aeronautical information and aeronautical data

3. (1) The Authority shall designate the office to which all elements of the Integrated Aeronautical Information Package originated by other States is to be forwarded.

(2) The office designated under subclause (1), shall be qualified to deal with requests for information and aeronautical data originated by other States.

(3) Where the Authority designates more than one international NOTAM office, the Director General shall define the extent of responsibility and the territory covered by each office.

(4) The aeronautical information service shall arrange, as necessary, to satisfy operational requirements for the issue and receipt of NOTAM distributed by telecommunication.

(5) The Director General shall, wherever practicable, establish direct contact with other AIS in order to facilitate the international exchange of aeronautical information and aeronautical data.

(6) One copy of each of the elements of the Integrated Aeronautical Information Package, in paper or electronic form or both, that has been requested by an AIS of another Contracting State shall be made available by the Director General in the mutually-agreed form, without charge, even where authority for publication, storage and distribution has been delegated to a commercial agency.

Copyright

4. Any AIS product of another Contracting State which has been granted copyright protection shall only be made available to a third party on condition that the third party is made aware that the product is copyright protected and provided that it is appropriately annotated that the product is subject to copyright protection of the originating State.

General specifications

5. (1) Each element of the Integrated Aeronautical Information Package for international distribution shall include English text for those parts expressed in plain language.

(2) The name of places shall be spelt in conformity with local usage and transliterated, where necessary, into the Latin alphabet.

6. ICAO abbreviations shall be used in the aeronautical information services where the abbreviations are appropriate and the use of those abbreviations will facilitate distribution of information and data.

7. (1) Each prohibited area, restricted area, or danger area established by the Authority shall, upon initial establishment, be given an identification and full details shall be promulgated under ENR 5.1 of the AIP.

(2) The identification assigned under subclause (4) shall—

(a) be used to identify the area in all subsequent notifications pertaining to that area; and

(b) be composed of a group of letters and figures as follows:

(i) nationality letters for location indicators assigned to the State or territory which has established the airspace;

(ii) a letter P for prohibited area, R for restricted area and D for danger area as appropriate; and

(iii) a number, unduplicated within the State or territory concerned.

(3) Identifiction numbers shall not be reused for a period of at least one year after cancellation of the area to which they refer.

8. (1) Human Factors Principles shall be taken into consideration in determining the organization of the aeronautical information services as well as the design, contents, processing and distribution of aeronautical information and data to facilitate their optimum utilization.

(2) Due consideration shall be given to the integrity of information where human interaction is required and mitigating steps taken where risks are identified.

Metadata

9. (1) Metadata shall be collected for aeronautical data processes and exchange points.

(2) The metadata collection in subclause (1) shall be applied throughout the aeronautical information data chain, from survey and origin to distribution to the next user.

(3) The metadata to be collected shall include, as a minimum—

(a) the name of the organization or entity performing the function;

(b) the function performed; and

(c) the date and time of the operation.

Common reference systems for air navigation

10. (1) Common reference system used for air navigation shall be as follows:

(a) World Geodetic System—1984 shall be used as the horizantal geodetic reference system for international air navigation and published aeronautical geographical coordinates indicating latitude and longitude shall be expressed in terms of the WGS-84 geodetic reference datum;

(b) geographical coordinates which have been transformed into WGS-84 coordinates but whose accuracy of original field work does not meet the requirements in Part A of Schedule 1 and Chapter 2 of Volume 1 of Annex 14 of the Chicago Convention, shall be identified by an asterix; and

(c) the order of publication resolution of geographical coordinates shall be that specified in Table A-1 of the Appendix while the order of chart resolution of geographical coordinates shall be that specified in Table 1 of Part A of Appendix 3 of Schedule 3.

(2) Vertical reference system for air navigation shall be as follows:

(a) MSL datum, which gives the relationship of gravity-related height (elevation) to a surface known as the geoid, shall be used as the vertical reference system for international air navigation;

(b) The Earth Gravitational Mode—1996 (EGM—96), containing long wavelength gravity field data to degree and order 360, shall be used by international air navigation as the global gravity model;

(c) Geographical positions where the accuracy of EGM-96 does not meet the accuracy requirements for elevation and geoid undulation specified in Volumes I and II of Annex 14, on the basis of EGM-96 data, regional, national or local geoid models containing high resolution (short wavelength) gravity field data shall be developed and used;

(d) where a geoid model other than the EGM-96 model is used, a description of the model used, including the parameters required for height transformation between the model and EGM-96, shall be provided in the AIP;

(e) further to elevation referenced to the MSL (geoid), for the specific surveyed ground positions, geoid undulation (referenced to the WGS-84 ellipsoid) for those positions specified in the Appendix to Part B of Schedule 2 shall also be published; and

(f) the order of publication resolution of elevation and geoid undulation shall be that specified in Table A-2 of the Appendix, while the order of chart resolution of elevation and geoid undulation shall be that specified in Table 3 of Part A of Appendix 3 of Schedule 3.

(3) Temporal references for air navigation shall be as follows:

(a) for international civil aviation, the Gregorian calendar and Coordinated Universal Time (UTC) shall be used as the temporal reference system; and

(b) where a different temporal reference system is used for some applications, the feature catalogue, or the metadata associated with an application schema or a data set, as appropriate, shall include either a description of that system or a citation for a document that describes that temporal reference system.

APPENDIX

Table A-1 Latitude and Longitude

[Schedule 2, Part A, Clause 2 (13)]

Latitude and Longitude	Publication Resolution	Integrity classification
Flight information region boundary points	1 min	1×10^{-3} routine
P, R, D area boundary points (outside CTA/CTR boundaries)	1 min	1×10^{-3} routine
P, R, D area boundary points (inside CTA/CTR boundaries)	1 sec	1×10^{-5} essential
CTA/CTR boundary points	1 sec	1×10^{-5} essential
En route navaids, intersections and waypoints, and holding STAR/SID points	1 sec	1×10^{-5} essential
Obstacles in Area 1 (the entire State territory)	1 sec	1×10^{-3} routine
Aerodrome/heliport reference point	1 sec	1×10^{-3} routine
NAVAIDS located at aerodrome/heliport	1/10 sec	1×10^{-5} essential

Obstacles in Area 3	1/10 sec	1×10^{-5} essential
Obstacle in Area 2	1/10 sec	1×10^{-5} essential
Final approach fixes/points and other essential fixes/points comprising the instrument approach procedure	1/10 sec	1×10^{-5} essential
Runway threshold	1/100 sec	1×10^{-8} critical
Runway end	1/100 sec	1×10^{-8} critical
Runway holding point	1/100 sec	1×10^{-8} critical
Taxiway centre line/parking guidance line points	1/100 sec	1×10^{-5} essential
Taxiway intersection marking line	1/100 sec	1×10^{-5} essential
Exit guidance line	1/100 sec	1×10^{-5} essential
Aircraft stand points/INS checkpoints	1/100 sec	1×10^{-3} routine
Geometric centre of TLOF or FATO threshold, heliport	1/100 sec	1×10^{-8} critical
Apron boundaries (polygon)	1/10 sec	1×10^{-3} routine
De-icing/anti-icing facility (polygon)	1/10 sec	1×10^{-3} routine

Table A-2 Elevation/ Altitude/Height

[Schedule 2, Part A, Clauses 2(9) and (13), 6(3) and (9)]

Elevation/Altitude/Height	Publication Resolution	Integrity classification
Aerodrome/heliport elevation	1 m or 1 ft	1×10^{-5} essential
WGS-84 geoid undulation at aerodrome/heliport elevation position	1 m or 1 ft	1×10^{-5} essential
Runway or FATO threshold, non-precision approaches	1 m or 1 ft	1×10^{-5} essential
WGS-84 geoid undulation at runway or FATO threshold, TLOF geometric centre, non-precision approaches	1 m or 1 ft	1×10^{-5} essential
Runway or FATO threshold, precision approaches	0.1 m or 0.1 ft	1×10^{-8} critical
WGS-84 geoid undulation at runway or FATO threshold, TLOF geometric centre, precision approaches	0.1 m or 0.1 ft	1×10^{-8} critical
Threshold crossing height, precision approaches	0.1 m or 0.1 ft	1×10^{-8} critical
Obstacles in Area 2	1 m or 1 ft	1×10^{-5} essential
Obstacles in Area 3	0.1 m or 0.1 ft	1×10^{-5} essential
Obstacles in Area 1 (the entire State territory)	1 m or 1 ft	1×10^{-3} routine
Distance measuring equipment/precision (DME/P)	3 m (10 ft)	1×10^{-5} essential
Distance measuring equipment (DME)	30 m (100 ft)	1×10^{-5} essential
Minimum altitudes	50 m or 100 ft	1×10^{-3} routine

See the Appendix to Part H for graphical illustration of obstacle data collection surfaces and criteria used to identify obstacles in defined areas		

Table A-3 Declination and Magnetic Variation
[Schedule 2, Part A, Clauses 2(9) and (13) and 6(3)]

Declination/Variation	Accuracy data type	Integrity classification
VHF NAV AID station declination used for technical line-up	1 degree	1×10^{-5} essential
NDB NAV AID magnetic variation	1 degree	1×10^{-3} routine
Aerodrome/heliport magnetic variation	1 degree	1×10^{-5} essential
ILS localizer antenna magnetic variation	1 degree	1×10^{-5} essential
MLS azimuth antenna magnetic variation	1 degree	1×10^{-5} essential

Table A-4 Bearing
[Schedule 2, Part A, Clauses 2(9) and (13) and 6(3)]

Bearing	Accuracy data type	Integrity classification
Airways segment	1 degree	1×10^{-3} routine
En route and terminal fix information	1/10 degree	1×10^{-3} routine
Terminal arrival/departure route segment	1 degree	1 x 10-3 routine
Instrument approach procedure fix formations	1/100 degree	1×10^{-5} essential
ILS localizer alignment (True)	1/100 degree	1×10^{-5} essential
MLS zero azimuth alignment (True)	1/100 degree	1×10^{-5} essential
Runway and FATO bearing (True)	1/100 degree	1×10^{-3} routine

Table A-5
Length, Distance and Dimension

Length/Distance/Dimension	Accuracy data type	Integrity classification
Airways segment length	1/10 km or 1/10 NM	1×10^{-3} routine
En-route fix formation distance	1/10 km or 1/10 NM	1×10^{-3} routine
Terminal arrival/departure route segment length	1/100 km or 1/100 NM	1×10^{-5} essential
Instrument approach procedure fix formation distance	1/100 km or 1/100 NM	1×10^{-5} essential
Runway and FATO length, TLOF dimensions	1 m or 1 ft	1×10^{-8} critical

Runway width	1 m or 1 ft	1×10^{-5} essential
Displaced threshold distance.	1 m or 1 ft	1×10^{-3} routine
Clearway length and width	1 m or 1 ft	1×10^{-5} essential
Stopway length and width	1 m or 1 ft	1×10^{-8} critical
Landing distance available	1 m or 1 ft	1×10^{-8} critical
Take-off run available	1 m or 1 ft	1×10^{-8} critical
Take-off distance available	1 m or 1 ft	1×10^{-8} critical
Accelerate-stop distance available	1 m or 1 ft	1×10^{-8} critical
Runway shoulder width	1 m or 1 ft	1×10^{-5} essential
Taxiway width	1 m or 1 ft	1×10^{-5} essential
Taxiway shoulder width	1 m or 1 ft	1×10^{-5} essential
ILS localizer antenna-runway end, distance	1 m or 1 ft	1×10^{-3} routine
ILS glide slope antenna-threshold, distance along centre line	1 m or 1 ft	1×10^{-3} routine
ILS marker-threshold distance	1 m or 1 ft	1×10^{-5} essential
ILS DME antenna-threshold, distance along centre line	1 m or 1 ft	1×10^{-5} essential
MLS azimuth antenna-runway end, distance	1 m or 1 ft	1×10^{-3} routine
MLS elevation antenna-threshold, distance along centre line	1 m or 1 ft	1×10^{-3} routine
MLS DME/P antenna-threshold, distance along centre line	1 m or 1 ft	1×10^{-5} essential

PART B

(Regulation 20)

AERONAUTICAL INFORMATION PUBLICATIONS (AIP)

The standards required to be met for AIP shall be as follows:

Contents

1. (1) An AIP shall contain, in three parts, sections and subsections uniformly referenced to allow for standardized electronic data storage and retrieval, current information relating to, and arranged under those subjects enumerated in the Appendix to this Part.

(2) Notwithstanding subclause (1), when the AIP, or volume of the AIP is designed basically to facilitate operational use in flight, the precise format and arrangement may be left to the discretion of the Director General provided that an adequate table of contents is included.

(3) An AIP shall include in Part 1—General (GEN) the following:

(a) a statement of the competent authority responsible for the air navigation facilities, services or procedures covered by the AIP;

(b) the general conditions under which the services or facilities are available for international use;

(c) a list of significant differences between the regulations and practices of Trinidad and Tobago and the related ICAO Standards, Recommended Practices and Procedures, given in a form that would enable a user to readily differentiate between the requirements of the Authority and the related ICAO provisions; and

(d) the choice made by the Director General in each significant case where an Alternative course of action is provided for in ICAO Standards, Recommended Practices and Procedures.

(4) The following aeronautical charts shall, where available for designated international ICAO aerodromes and heliports, form part of the AIP, or be distributed separately to recipients of the AIP:

(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.

(5) Charts, maps or diagrams shall be used, where appropriate, to complement or as a substitute for the tabulations or text of an AIP.

General specifications

2. (1) An AIP shall—

(a) be self-contained and include a table of contents; and

(b) not duplicate information within the AIP or from other sources.

(2) Where the Authority and another State combine to issue a joint AIP, this information shall be made clear on the cover and in the table of contents.

(3) All AIP shall be dated.

(4) Where an AIP is issued in loose-leaf form, each page shall contain the day, month and year of the publication date or the effective date of the information.

(5) A checklist giving the current date of each page in the AIP series shall be reissued frequently to assist the user in maintaining a current publication.

(6) The page number, chart title and date of the checklist under subclause (4), shall appear on the checklist itself.

(7) An AIP issued as a bound volume and each page of an AIP issued in loose-leaf form shall be so annotated as to indicate clearly—

(a) the identity of the AIP;

(b) the territory covered and subdivisions when necessary;

(c) the identification of the issuing State and the authority;

(d) page numbers and chart titles; and

(e) the degree of reliability where the information is doubtful.

(8) All changes to the AIP, or new information on a reprinted page, shall be identified by a distinctive symbol or annotation.

(9) Operationally significant changes to the AIP shall be published in accordance with AIRAC procedures and shall be clearly identified by the acronym—AIRAC.

(10) AIP shall be amended or reissued at such regular intervals as may be necessary to keep the AIP up-to-date.

(11) Recourse to hand amendments or annotations shall be kept to the minimum.

(12) The normal method of amendment shall be by means of a replacement sheet.

(13) The regular interval referred to in subclause (10) shall be specified in the AIP.

Part 1—General (GEN).

Specifications for AIP Amendments

3. (1) Permanent changes to the AIP shall be published as AIP amendments.

(2) Each AIP amendments shall be allocated a consecutive serial number.

(3) Each AIP amendment page, including the cover sheet, shall display a publication date.

(4) Each AIRAC AIP amendment page, including the cover sheet, shall display the date when the amendment becomes effective.

(5) Where an effective time other than 0000UTC is used, the effective time shall also be displayed on the cover sheet.

(6) When an AIP amendment is issued, the AIP amendment shall include references to the serial number of those elements, if any, of the Integrated Aeronautical Information Package which has been incorporated into the amendment.

(7) A brief indication of the subjects affected by the amendment shall be stated on the AIP amendment cover sheet.

(8) When an AIP amendment will not be published at the established interval or publication date, a NIL notification shall be originated and distributed by the monthly printed plain-language list of valid NOTAM required in subclause 2(14) of Part C of this Schedule.

Specifications for AIP Supplements

4. (1) Temporary changes of duration three months or longer and information of short duration which contains extensive text or graphics shall be published as AIP Supplements.

(2) Each AIP supplement shall be allocated consecutive serial numbers based on the calendar year.

(3) AIP supplement pages shall be kept in the AIP for as long as all or some of their contents remain valid.

(4) Where an AIP supplement is sent in replacement of a NOTAM, the AIP supplement shall include a reference to the serial number of the NOTAM.

(5) A checklist of valid AIP supplements shall be issued through the medium of the monthly printed plain-language list of valid NOTAM required in subclause 2(14) of Part C of this Schedule.

(6) Where an error occurs in an AIP Supplement or when the period of validity of an AIP Supplement is changed, a new AIP Supplement shall be published as a replacement.

Distribution

5. AIP amendments and AIP supplements shall be made available by the Authority by the most expeditious means.

Electronic AIP (eAIP)

6. (1) Where provided, the information content of the electronic AIP and the structure of the chapters, sections and subsections shall follow the content and structure of the paper AIP.

(2) The electronic AIP shall include files that allow for printing a paper AIP.

APPENDIX

(Schedule 2, Part B)

CONTENTS OF AERONAUTICAL INFORMATION PUBLICATION (AIP)

NOTE*: This Appendix provides for structure in which an AIP is to be formatted.*

PART 1—GENERAL (GEN)

Where an AIP is produced and made available in more than one volume with each having a separate amendment and supplement service, a separate preface, record of AIP amendments, record of AIP supplements, checklist of AIP pages and list of current hand amendments must be included in each volume.

GEN 0.1—Preface

Brief description of the AIP, including the—

(a) name of the publishing authority;

(b) applicable ICAO documents;

(c) AIP structure and established regular amendment interval; and

(d) service to contact in case of detected AIP errors or omissions.

GEN 0.2—Record of AIP Amendments

A record of AIP amendments and AIRAC AIP amendments published in accordance with the AIRAC system containing the—

(a) amendment number;

(b) publication date;

(c) date inserted for AIP amendments and effective date for AIRAC AIP amendments; and

(d) initials of officer who inserted the amendment.

GEN 0.3—Record of AIP Supplements

A record of issued AIP Supplements containing the—

(a) supplement number;

(b) supplement subject;

(c) AIP section affected;

(d) period of validity; and

(e) cancellation record.

GEN 0.4—Checklist of AIP pages

A checklist of AIP pages containing the—

(a) page number and chart title; and

(b) publication or effective date of the aeronautical information expressed as day, month by name and year.

GEN 0.5—List of hand amendments to the AIP

A list of current hand amendments to the AIP containing the—

(a) AIP page affected;

(b) amendment text; and

(c) AIP amendment number by which a hand amendment was introduced.

GEN 0.6—Table of contents to Part 1

A list of all sections and subsections of the subjects enumerated in Part 1—General (GEN).

GEN 1.—NATIONAL REGULATIONS AND REQUIREMENTS

GEN 1.1—Designated authorities

The addresses of authorities designated by the Government of Trinidad and Tobago concerned with the facilitation of international air navigation such as civil aviation, meteorology, customs, immigration, health, *en route* and aerodrome/heliport charges, agricultural quarantine and aircraft accident investigation and containing, for each authority the—

(a) designated authority;

(b) name of the authority;

(c) postal address;

(d) telephone number;

(e) telefax number;

(f) e-mail address;

(g) AFS address; and

(h) website address, where available.

GEN 1.2—Entry, transit and departure of aircraft

Regulations and requirements for advance notification and applications for permission concerning entry, transit and departure of aircraft on international flights.

GEN 1.3—Entry, transit and departure of passengers and crew

Regulations including customs, immigration and quarantine, and requirements for advance notification and applications for permission and concerning entry, transit and departure of non-immigrant passengers and crew.

GEN 1.4—Entry, transit and departure of cargo

Regulations including customs and requirements for advance notification and applications for permission and concerning entry, transit and departure of cargo.

NOTE*: Provisions for facilitating entry and departure for search, rescue, salvage, investigation, repair or salvage in connection with lost or damaged aircraft are detailed in GEN 3.6, search and rescue.*

GEN 1.5—Aircraft instruments, equipment and flight documents

A brief description of aircraft instruments, equipment and flight documents, including the aircraft communication, navigation and surveillance equipment to be carried on aircraft and any special requirement in addition to the requirements specified in the Civil Aviation [(No. 7) Instrument and Equipment] Regulations, 2004.

GEN 1.6—Summary of national regulations and international agreements and conventions

A list of titles and references and, where applicable, summaries of national regulations affecting air navigation, together with a list of international agreements and conventions ratified by Trindad and Tobago.

GEN 1.7—Differences from ICAO Standards, Recommended Practices and Procedures

A list of significant differences between any written law and practices in Trinidad and Tobago and related ICAO provisions must be listed under this subsection, including the:

(a) provision affected (Annex and edition number, paragraph);

(b) difference in full text;

(c) all Annexes in numerical order even if there is no difference to an Annex, in which case a NIL notification shall be provided; and

(d) the degree of non-application of the regional supplementary procedures that shall be notified immediately following the Annex to which the supplementary procedure relates.

GEN 2.—TABLES AND CODES

GEN 2.1—Measuring system, aircraft markings and holidays

GEN 2.1.1—Units of measurement

A description of units of measurement used including table of units of measurement.

GEN 2.1.2—Temporal reference system

A description of the temporal reference system employed, together with an indication of whether or not daylight saving hours are employed and how the temporal reference system is presented throughout the AIP.

GEN 2.1.3—Horizontal reference system

A brief description of the horizontal reference system used, including—

(a) the name and designation of the reference system;

(b) the identification of the projection;

(c) the identification of the ellipsoid used;

(d) the identification of the datum used;

(e) the area of application; and

(f) an explanation, where applicable, of the asterisk used to identify those coordinates that do not meet the accuracy requirements of Schedule 1 and Annex 14.

GEN 2.1.4—Vertical reference system

A brief description of the vertical reference system used, including the—

(a) name and designation of the reference system;

(b) description of the geoid model used including the parameters required for height transformation between the model used and EGM-96; and

(c) an explanation, where applicable, of the asterisk used to identify those elevations and geoid undulations that do not meet the accuracy requirements of Annex 14.

GEN 2.1.5—Aircraft nationality and registration marks

An indication of aircraft nationality and registration as specified in Civil Aviation [(No. 4) Registration and Markings] Regulations, 2004.

GEN 2.1.6—Public holidays

A list of public holidays indicating the services being affected.

GEN 2.2—Abbreviations used in AIS publications

A list of alphabetically arranged abbreviations and their respective significations used by the Authority in its AIP and in the distribution of aeronautical information and data with appropriate annotation for those national abbreviations that are different from those contained in the ICAO Procedures for Air Navigation Services Doc 8400.

NOTE*: A list of alphabetically arranged definitions or glossary of terms may also be added.*

GEN 2.3—Chart symbols

A list of chart symbols arranged according to the chart series where symbols are applied.

GEN 2.4—Location indicators

A list of alphabetically arranged location indicators assigned to the locations of AFS to be used for encoding and decodiing purposes with an annotation to locations not connected to the AFS where applicable.

GEN 2.5—List of radio navigation aids

A list of radio navigation aids arranged alphabetically, containing—

(a) the identifier;

(b) the name of the station;

(c) the type of facility or aid; and

(d) the indication whether aid serves *en route*, aerodrome or dual purposes represented by the letters EA and AE respectively.

GEN 2.6—Conversion tables

Tables for conversion between—

(a) nautical miles and kilometres and *vice versa;*

(b) feet and metres and *vice versa;*

(c) decimal minutes of arc and seconds of arc and *vice versa;* and

(d) other conversion tables, as appropriate.

GEN 2.7—Sunrise and sunset tables

A brief description of criteria used for determination of the times given in the sunrise and sunset tables, together with an alphabetical list of locations for which the times are given with a reference to the related page in the table and the sunrise and sunset tables for the selected stations or locations, including the—

(a) station name;

(b) ICAO location indicator;

(c) geographical coordinates in degrees and minutes;

(d) date for which times are given;

(e) time for the beginning of morning civil twilight;

(f) time for sunsrise;

(g) time for sunset; and

(h) time for the end of evening civil twilight.

GEN 3.—SERVICES

GEN 3.1—Aeronautical information services

GEN 3.1.1—Responsible service

A description of the AIS provided and its major components, including—

(a) the service and unit name;

(b) the postal address;

(c) the telephone number;

(d) the telefax number;

(e) e-mail address;

(f) the AFS address;

(g) website address, where available;

(h) a statement concerning the ICAO documents on which the service is based and a reference to the AIP location where differences, if any, are listed; and

(i) an indicaiton if service is not H24.

GEN 3.1.2—Area of responsibility

The area of responsibility for the aeronautical information service.

GEN 3.1.3—Aeronautical publications

A description of the elements of the Integrated Aeronautical Information Package, including—

(a) AIP and related amendment service;

(b) AIP supplements;

(c) AIC including whether used to publish publication prices;

(d) NOTAM and PIB;

(e) checklists and lists of valid NOTAM; and

(f) how each element may be obtained.

GEN 3.1.4—AIRAC system

A brief description of the AIRAC system provided including a table of present and near future AIRAC dates.

GEN 3.1.5—Pre-flight information service at aerodromes and heliports

A list of aerodromes and heliports at which pre-flight information is routinely available, including an indication of the relevant—

(a) elements of the Integrated Aeronautical Information Packages held;

(b) maps and charts held; and

(c) general area of coverage of such data.

GEN 3.1.6—Electronic terrain and obstacle data

Details of how electronic terrain and obstacle data may be obtained, containing the—

(a) name of the individual, service or organization responsible;

(b) street address and e-mail address of the individual, service or organization responsible;

(c) telefax number of the individual, service or organization responsible;

(d) telephone number of the individual, service or organization responsible;

(e) hours of service represented in time period including time zone when contact can be made;

(f) online information that can be used to contact the individual, service or organization; and

(g) supplemental information, where necessary, on how and when to contact the individual, service or organization.

GEN 3.2—Aeronautical Charts

GEN 3.2.1—Responsible service

A description of service responsible for the production of aeronautical charts, including—

(a) the service name;

(b) the postal address;

(c) the telephone number;

(d) the telefax number;

(e) e-mail address;

(f) the AFS address;

(g) website address, where available;

(h) a statement concerning the ICAO documents on which the service is based and a reference to the AIP location where differences, if any, are listed; and

(i) an indication if service is not H24.

GEN 3.2.2—Maintenance of charts

A brief description of how aeronautical charts are revised and amended.

GEN 3.2.3—Purchase arrangements

Details of how charts may be obtained containing the—

(a) service and sales agency;

(b) postal address;

(c) telephone number;

(d) telefax number;

(e) e-mail address;

(f) AFS address; and

(g) website address, where available.

GEN 3.2.4—Aeronautical chart series available

A list of aeronautical chart series available followed by a general description of each series and an indication of the intended use.

GEN 3.2.5—List of aeronautical charts available

A list of aeronautical charts available, including the—

(a) title of series;

(b) scale of series;

(c) name and number of each chart or each sheet in a series;

(d) price per sheet; and

(e) date of latest revision.

GEN 3.2.6—Index to the WAC-ICAO 1:1000 000

An index chart showing coverage and sheet layout for the WAC 1:1000 000 produced by the Authority where Aeronautical Chart—ICAO 1:500 000 is produced instead of WAC 1:1000 000, index charts must be used to indicate coverage and sheet layout for the Aeronautical Chart—ICAO 1:500 000.

GEN 3.2.7—Topographical charts

Details of how topographical charts may be obtained, containing the—

(a) name of service and agency;

(b) postal address;

(c) telephone number;

(d) telefax number;

(e) e-mail address;

(f) AFS address; and

(g) website address, where available.

GEN 3.2.8—Corrections to charts not contained in the AIP

A list of corrections to aeronautical charts not contained in the AIP, or an indication where the information can be obtained.

GEN 3.3—Air traffic services

GEN 3.3.1—Responsible service

A description of the ATS and its major components, including—

(a) the service name;

(b) the postal address;

(c) the telephone number;

(d) the telefax number;

(e) e-mail address;

(f) the AFS address;

(g) website address, where available;

(h) a statement concerning the ICAO documents on which the service is based and a reference to the AIP location where differences, if any, are listed; and

(i) an indication if service is not H24.

GEN 3.3.2—Area of responsibility

A brief description of area of responsibility for which ATS are provided.

GEN 3.3.3—Types of services

A breif description of main types of ATS provided.

GEN 3.3.4—Coordination between an operator and ATS

General conditions under which coordination between an operator and ATS is effected.

GEN 3.3.5—Minimum flight altitude

The criteria used to determine minimum flight altitudes.

GEN 3.3.6—ATS units address list

A list of ATS units and the units addresses arranged alphabetically, containing the—

(a) unit name;

(b) postal address;

(c) telephone number;

(d) telefax number;

(e) e-mail address;

(f) AFS address; and

(g) website address, where available.

GEN 3.4.—Communication services

GEN 3.4.1—Responsible service

A description of the service responsible for the provision of telecommunication and navigation facilities, including—

(a) the service name;

(b) the postal address;

(c) the telephone number;

(d) the telefax number;

(e) e-mail address;

(f) the AFS address;

(g) website address, where available;

(h) a statement concerning the ICAO documents on which the service is based and a reference to the AIP location where differences, if any, are listed; and

(i) an indication if service is not H24.

GEN 3.4.2—Area of responsibility

A brief description of area of responsibility for which telecommunication service is provided.

GEN 3.4.3—Types of service

A brief description of the main types of service and facilities provided, including—

(a) the radio navigation services;

(b) voice or data link services;

(c) the broadcasting service;

(d) the language used; and

(e) an indication of where detailed information can be obtained.

GEN 3.4.4—Requirements and conditions

A brief description concerning the requirements and conditions under which the communication service is available.

GEN 3.5—Meteorological services

GEN 3.5.1—Responsible service

A brief description of the meteorological service responsible for the provision of meteorological information, including—

(a) the service name;

(b) the postal address;

(c) the telephone number;

(d) the telefax number;

(e) e-mail address;

(f) the AFS address;

(g) website address, where available;

(h) a statement concerning the ICAO documents on which the service is based and a reference to the AIP location where differences, if any, are listed; and

(i) an indication if service is not H24.

GEN 3.5.2—Area of responsibility

A brief description of the area and air routes for which meteorological service is provided.

GEN 3.5.3—Meteorological observations and reports

A detailed description of the meteorological observations and reports provided for international air navigation, including the—

(a) name of the station and the ICAO location indicator;

(b) type and frequency of observation including an indication of automatic observing equipment;

(c) types of meteorological reports such as METAR and availability of a trend forecast;

(d) specific type of observation system and number of observation sites used to observe and report surface wind, visibility, runway visual range, cloud base, temperature, and where applicable, wind shear measured by an anemometer at intersection of runways and transmissiometer next to touchdown zone;

(e) hours of operations; and

(f) indication of aeronautical climatological information available.

GEN 3.5.4—Types of services

Brief description of the main types of service provided, including details of briefing, consultation, display of meteorological information, flight documentation available for operators and flight crew members, and of the methods and means used for supplying the meteorological information.

GEN 3.5.5—Notification required from operators

Minimum amount of advance notice required by the unit responsible for meteorological services from operators in respect of briefing, consultation and flight documentation and other meteorological information they require or change.

GEN 3.5.6—Aircraft reports

As necessary, requirements of the unit responsible for meteorological services for the making and transmission of aircraft reports.

GEN 3.5.7—VOLMET service

Description of VOLMET or VOLMET service, including the—

(a) name of transmitting station;

(b) call sign or identification and abbreviation for the radio communication emission;

(c) frequency or frequencies used for broadcast;

(d) broadcasting period;

(e) hours of service;

(f) list of aerodromes and heliports for which reports and forecasts are included; and

(g) reports, forecasts and SIGMET information included and remarks.

GEN 3.5.8—SIGMET and AIRMET service

Description of the meteorological watch provided within flight information regions or control areas for which ATS are provided, including a list of the meteorological watch offices with the—

(a) name of the meteorological watch office, ICAO location indicator;

(b) hours of service;

(c) flight information region or control area served;

(d) SIGMET validity periods;

(e) specific procedures applied to SIGMET information such as for volcanic ash and tropical cyclones;

(f) procedures applied to AIRMET information in accordance with relevant regional air navigation agreements;

(g) ATS unit provided with SIGMET and AIRMET information; and

(h) additional information such as limitation of service.

GEN 3.5.9—Other automated meteorological services

Description of available automated services for the provision of meteorological information such as automated pre-flight information service accessible by telephone and computer modem including the—

(a) service name;

(b) information available;

(c) areas, routes and aerodromes covered; and

(d) telephone and telefax numbers, e-mail address and where available, website address.

GEN 3.6—Search and rescue

GEN 3.6.1—Responsible service

Brief description of service responsible for the provision of SAR, including—

(a) the service and unit name;

(b) the postal address;

(c) the telephone number;

(d) the telefax number;

(e) e-mail address;

(f) the AFS address;

(g) website address, where available; and

(h) a statement concerning the ICAO documents on which the service is based and a reference to the AIP location where differences, if any, are listed.

GEN 3.6.2—Area of responsibility

A brief description of area of responsibility within which SAR services are provided.

GEN 3.6.3—Types of service

A brief description and geographical portrayal, where appropriate, of the type of service and facilities provided including indications where SAR aerial coverage is dependent upon significant deployment of aricraft.

GEN 3.6.4—SAR agreements

A brief description of SAR agreements in force, including provisions for facilitating entry and departure of other States' aircraft for search, rescue, salvage, repair or salvage in connection with lost or damaged aricraft, either with airborne notification only or after flight plan notification.

GEN 3.6.5—Conditions of availability

A brief description of provisions for search and rescue, including the general conditions under which the service and facilities are available for international use, including an indication of whether a facility available for search and rescue is specialized in SAR techniques and functions, or is specially used for other purposes but adapted for SAR purposes by training and equipment, or is only occasionally available and has no particular training or preparation for SAR work.

GEN 3.6.6—Procedures and signals used

A brief description of the procedures and signals employed by rescue aircraft and a table showing the signals to be used by survivors.

GEN 4.—CHARGES FOR AERODROMES, HELIPORTS AND AIR NAVIGATION SERVICES

Reference may be made to where details of actual charges may be found, if not itemized in this chapter.

GEN 4.1—Aerodrome and heliport charges

Brief description of type of charges which may be applicable at aerodromes and heliports available for international use, including—

(a) the landing of aircraft;

(b) the parking, hangarage and long-term storage of aircraft;

(c) the passenger service;

(d) the security;

(e) the noise-related items;

(f) other information such as, customs, health and immigration;

(g) the exemptions and reductions; and

(h) methods of payment.

GEN 4.2—Air navigation services charges

A brief description of charges which may be applicable to air navigation services provided for international use, including the—

(a) approach control;

(b) route air navigation services;

(c) cost basis for air navigation services and exemptions and reductions; and

(d) methods of payment.

PART 2—*EN ROUTE* (ENR)

Where an AIP is produced and made available in more than one volume with each having a separate amendment and supplement service, a separate preface, record of AIP Amendments, record of AIP Supplements, checklist of AIP pages and list of current hand amendments must be included in each volume. In the case of an AIP being published as one volume, the annotation "not applicable" must be entered against each of the above subsections.

Reference must be made in the appropriate subsection to indicate that differences between national regulations and ICAO SARPs and procedures exist and that they are detailed in GEN 1.7.

ENR 0.6—TABLE OF CONTENTS TO PART 2

A list of sections and subsections contained in Part 2—*En route*.

NOTE*: Subsections may be listed alphabetically.*

ENR 1.—General Rules and Procedures

ENR 1.1—General rules

Publication of the general rules as applied within the Piarco Flight Information Region.

ENR 1.2—Visual flight rules

Publication of the VFR as applied within the Piarco Flight Information Region.

ENR 1.3—Instrument flight rules

Publication of the instrument flight rules as applied within the Piarco Flight Information Region.

ENR 1.4—ATS airspace classification

The description of ATS airspace classes, in the form of ATS airspace classification table set out in Appendix 4 of Schedule 1, and appropriately annotated to indicate those airspace classes not used by the Piarco Flight Information Region.

ENR 1.5—Holding, approach and departure procedures

ENR 1.5.1—General

A statement setting out the criteria on which holding, approach and departure procedures are established. Where the format is different from the ICAO requirements the presentation of criteria should be in a tabular form.

ENR 1.5.2—Arriving flights

Presentation of conventional or area navigation procedures for arriving flights which are common to flights into or within the same type of airspace. Where different procedures apply within a terminal airspace, a note to this effect must be given together with a reference to where the specific procedure can be found.

ENR 1.5.3—Departing flights

Presentation of conventional or area navigation procedures for departing flights which are common to flights departing from any aerodrome or heliport.

ENR 1.6—ATS surveillance services and procedures

ENR 1.6.1—Primary radar

A description of primary radar services and procedures, including the—

(a) supplementary services;

(b) the application of radar control service;

(c) radar and air-ground communication failure procedures;

(d) voice and CPDLC position reporting requirements; and

(e) graphic portrayal of area of radar coverage.

ENR 1.6.2—Secondary surveillance radar

A description of SSR operating procedures, including—

(a) emergency procedures;

(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.

NOTE*: The SSR description is of particular importance in areas or routes where the possibility of interception exists.*

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.*

ENR 1.7—Altimeter setting procedures

A statement of altimeter setting procedures in use, containing—

(a) brief introduction with a statement concerning the ICAO documents on which the procedures are based together with differences to ICAO provisions, if any;

(b) basic altimeter setting procedures;

(c) description of altimeter setting region;

(d) procedures applicable to operators including pilots; and

(e) table of cruising levels.

ENR 1.8—Regional supplementary procedures

Presentation of SUPPS affecting the entire area of responsibility, with properly annotated national diferences, if any.

ENR 1.9—Air traffic flow management

A brief description of ATFM system, including the—

(a) ATFM structure, service area, service provided, location of unit and hours of operation;

(b) types of flow messages and descriptions of the formats; and

(c) procedures applicable for departing flights, containing the—

(i) service responsible for provision of information on applied ATFM measures;

(ii) flight plan requirements; and

(iii) slot allocations.

ENR 1.10—Flight planning

An indication of any restriction, limitation or advisory information related to the flight planning stage which may assist the user in the presentation of the intended flight operation, including the—

(a) procedures for the submission of a flight plan;

(b) repetitive flight plan system; and

(c) changes to the submitted flight plan.

ENR 1.11—Addressing of flight plan messages

An indication, in tabular form, of the addresses allocated to flight plans, showing the—

(a) category of flight such as IFR, VFR;

(b) route into or through the FIR or TMA; and

(c) message address.

ENR 1.12—Interception of civil aircraft

A complete statement of interception procedures and visual signals to be used with a clear indication of whether ICAO provisions are applied and if not, a complete presentation of differences.

ENR 1.13—Unlawful interference

A presentation of appropriate procedures to be applied in case of unlawful interference.

ENR 1.14—Air traffic incidents

A description of air traffic incidents reporting system, including the—

(a) definition of air traffic incidents;

(b) use of the Air Traffic Incident Reporting Form;

(c) reporting procedures including in-flight reporting procedures; and

(d) purpose for reporting and handling of the form.

ENR 2.—Air Traffic Services Airspace

ENR 2.1—FIR, UIR, TMA

A detailed description of flight information regions, upper flight information regions, and terminal control areas, including the—

(a) name, geographical coordinates in degrees and minutes of the FIR or UIR lateral limits and in degrees, minutes and seconds of the TMA lateral limits, vertical limits and class of airspace;

(b) identification of unit providing the service;

(c) call sign of aeronautical station serving the unit and the language used, specifying the area and conditions, when and where to be used, if applicable;

(d) frequencies supplemented by indications for specific purposes; and

(e) remarks.

Control zones around military air bases not otherwise described in the AIP must be included under this heading.

Where the requirements of Civil Aviation [(No. 2) Operations] Regulations, 2004, concerning flight plans, two-way communications and position reporting apply to all flights in order to eliminate or reduce the need for interceptions or where the possibility of interception exists and the maintenance of guard on the VHF emergency channel 121.5 MHz is required, a statement to this effect must be included for the relevant area or portion.

A description of designated areas over which the carriage of an ELT is required and where aircraft shall continuously guard the VHF emergency frequency 121.5 MHz, except for those periods when aircraft are carrying out communications on other VHF channels or when airborne equipment limitations or cockpit duties do not permit simultaneous guarding of two channels.

NOTE: *Other types of airspace around civil aerodromes and heliports such as control zones and aerodrome traffic zones are described in the relevant aerodrome or heliport section.*

ENR 2.2—Other regulated airspace

Where established, a detailed description of other types of regulated airspace and airspace classification.

ENR 3.—ATS ROUTES

NOTE 1: *Bearings, tracks and radials are normally magnetic. In areas of high latitude, where it is determined by the appropriate authority that reference to Magnetic North is impractical, another suitable reference, such as True North or Grid North, may be used.*

NOTE 2: *Change over points established at the midpoint between two radio navigation aids, or at the intersection of the two radials in the case of a route which changes direction between the navigation aids, need not be shown for each route segment if a general statement regarding their existence is made.*

ENR 3.1—Lower ATS routes

Detailed description of lower ATS routes, including the—

(a) route designator, designation of the navigation specification applicable to a specified segment, name, coded designator or name-code and the geographical coordinates in degrees, minutes and seconds of all significant points defining the route including "compulsory" or "on-request" reporting points;

(b) track or VOR radial to the nearest degree, geodetic distance to the nearest tenth of a kilometer or tenth of a nautical mile between each successive designated significant point and, in the case of VOR radials, chanegover points;

(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, where applicable, its logon address and any navigaiton specification limitations.

NOTE: *In relation to Appendix 1 of Schedule 1 and for flight planning purposes, the specified RNP type is not considered to be an integral part of the route designator.*

ENR 3.2—Upper ATS routes

A detailed description of upper ATS routes, including the—

(a) route designator, designation of the navigation specification applicable to a specified segment, name, coded designator or name-code and the geographical coordinates in degrees, minutes and seconds of all significant points defining the route including "compulsory" or "on-request" reporting points;

(b) track or VOR radial to the nearest degree, geodetic distance to the nearest tenth of a kilometer or tenth of a nautical mile between each successive designated significant point and, in the case of VOR radials, chanegover points;

(c) upper and lower limits and airspace classification;

(d) lateral limits;

(e) direction of cruising levels; and

(f) remarks, including an indication of the controlling unit, its operating channel and, if applicable, its logon address and any navigation specification limitations.

NOTE: *In relation to Appendix 1 of Schedule 1 and for flight planning purposes, the specified RNP type is not considered to be an integral part of the route designator.*

ENR 3.3—Area navigation routes

A detailed description of area navigation routes, including the—

(1) route designator, designation of navigation specification applicable to a specified segment, name, coded designator or name-code and the geographical coordinates in degrees, minutes and seconds of all significant points defining the route including compulsory or on-request reporting points;

(2) in respect of waypoints defining a VOR or DME area navigation route, including the—

(a) station identification of the reference VOR or DME;

(b) bearing to the nearest degree and the distance to the nearest tenth of a kilometer or tenth of a nautical mile from the reference VOR or DME, if the waypoint is not collocated with it; and

(c) elevation of the transmitting antenna of DME to the nearest thirty metres or one hundred feet;

(3) geodetic distance to the nearest tenth of a kilometer or tenth of a nautical mile between defined end-points and distance between each successive designated significant point;

(4) upper and lower limits and airspace classification;

(5) direction of cruising levels; and

(6) remarks, including an indication of the controlling unit, its operating channel and where applicable, its logon address and any navigation specification limitations.

NOTE: *In relation to Appendix 1 of Schedule 1 and for flight planning purposes, the specified RNP type is not considered to be an integral part of the route designator.*

ENR 3.4—Helicopter routes

A detailed description of helicopter routes, including the—

(1) route designator, designation of navigation specification applicable to a specified segment, name, coded designator or name-code and the geographical coordinates in degrees, minutes and seconds of all significant points defining the route including compulsory or on-request reporting points;

(2) tracks or VOR radials to the nearest degree, geodetic distance to the nearest tenth of a kilometer or tenth of a nautical mile between each successive designated significant point and, in the case of VOR radials, changeover points;

(3) upper and lower limits and airspace classification;

(4) minimum flight altitudes to the nearest higher 50 metres or 100 feet; and

(5) remarks, including an indication of the controlling unit and its operating frequency.

NOTE: *In relation to Appendix 1 of Schedule 1 and for flight planning purposes, the specified RNP type is not considered to be an integral part of the route designator.*

ENR 3.5—Other routes

A description of other specifically designated routes which are compulsory within specified area.

NOTE: *Arrival, transit and departure routes which are specified in connection with procedures for traffic to and from aerodromes and heliports need not be described since they are described in the relevant section of Part 3 of the AIP—Aerodromes.*

ENR 3.6—En route holding

A detailed description of en route holding procedures, containing the—

(1) holding identification where applicable and holding fix (navigation aid) or waypoint with geographical coordinates in degrees, minutes and seconds;

(2) inbound track;

(3) direction of the procedure turn;

(4) maximum indicated airspeed;

(5) minimum and maximum holding level;

(6) time and distance outbound; and

(7) indication of the controlling unit and its operating frequency.

NOTE: *Obstacle clearance criteria related to holding procedures are contained in ICAO Doc 8168 "Procedures for AIR Navigation Services—Aircraft Operations PANS-OPS", Volumes I and II.*

ENR 4.—Radio Navigation Aids and Systems

ENR 4.1—Radio navigation aids—en route

A list of stations providing radio navigation services established for *en route* purposes and arranged alphabetically by name of the station, including—

(1) the name of the station and magnetic variation to the nearest degree and for VOR, station declination to the nearest degree used for technical line-up of the aid;

(2) the identification code;

(3) the frequency and channel for each element;

(4) the hours of operation;

(5) the geographical coordinates in degrees, minutes and seconds of the position of the transmitting antenna;

(6) the elevation of the transmitting antenna to DME to the nearest 30 metres or 100 feet; and

(7) remarks.

Where the operating authority of the facility is not the Authority, the name of the operating authority and facility coverage must be indicated in the remarks column.

ENR 4.2—Special navigation systems

A description of stations associated with special navigation systems such as DECCA and LORAN, including—

(1) the name of station or chain;

(2) the type of service available such as master signal, slave signal and colour;

(3) the frequency of operations together with the channel number, basic pulse rate, recurrence rate, as applicable;

(4) the hours of operation;

(5) the geographical coordinates in degrees, minutes and seconds of the position of the transmitting station; and

(6) remarks.

Where the operating authority of the facility is not the Authority, the name of the operating authority and facility coverage must be indicated in the remark column.

ENR 4.3—Global navigation satellite system

A list and description of elements of the global navigation satellite system providing the navigation service established for *en route* purposes and arranged alphabetically by name of the element, including—

(1) the name of the GNSS element such as GPS, GLONASS, EGNOS, MSAS and WAAS;

(2) the frequency, as appropriate;

(3) the geographical coordinates in degrees, minutes and seconds of the nominal service area and coverage area; and

(4) remarks.

Where the operating authority of the facility is not the Authority, the name of the operating authority must be indicated in the remarks column.

ENR 4.4—Name-code designators for significant points

An alphabetically arranged list of five-letter pronounceable name-code designators established for significant points at positions other than the site of radio navigation aids, including the—

(1) name-code designator;

(2) geographical coordinates in degrees, minutes and seconds of the position; and

(3) reference to ATS or other routes where the point is located.

ENR 4.5—Aeronautical ground lights—en route

A list of aeronautical ground lights and other light beacons designating geographical positions which are selected by the Authority as being significant, including the—

(1) name of the city or town or other identification of the beacon;

(2) type of beacon and intensity of the light in thousands of candelas;

(3) characteristics of the signal;

(4) operational hours; and

(5) remarks.

ENR 5.—Navigation Warnings

ENR 5.1—Prohibited, restricted and danger areas

A description, supplemented by graphic portrayal where appropriate, of prohibited, restricted and danger areas together with information regarding their establishment and activation, including—

(1) the identification, name and geographical coordinates of the lateral limits in degrees, minutes and seconds if inside and in degrees and minutes if outside control area or control zone boundaries;

(2) the upper and lower limits; and

(3) remarks, including time of activity.

Type of restriction or nature of hazard, risk of interception in the event of penetration and time of activity must be indicated in the remarks column.

ENR 5.2—Military exercise and training areas and air defence identification zone

A description, supplemented by graphic portrayal where appropriate, of established military training areas and military exercises taking place at regular intervals, and established Air Defence Identification Zone ADIZ, including—

(1) the geographical coordinates of the lateral limits in degrees, minutes and seconds if inside and in degrees and minutes if outside control area or control zone boundaries;

(2) the upper and lower limits and system and means of activation announcements together with information pertinent to civil flights and applicable ADIZ procedures; and

(3) remarks.

Time of activity and risk of interception in the event of penetration of ADIZ must be indicated in the remarks section.

ENR 5.3—Other Activities of a Dangerous Nature and other Potential Hazards

ENR 5.3.1—Other activities of a dangerous nature

A description, supplemented by charts where appropriate, of activities that could affect flights including the—

(1) the geographical coordinates in degrees and minutes of centre of area and range of influence;

(2) the vertical limits of activities of a dangerous nature;

(3) the advisory measures;

(4) the authority responsible for the provision of information; and

(5) remarks, including time of activity.

ENR 5.3.2—Other potential hazards

A description, supplemented by charts where appropriate, of other potential hazards such as active volcanoes, nuclear power stations that could affect flights, including—

(a) the geographical coordinates in degrees and minutes of location of potential hazard;

(b) the vertical limits of the potential hazards;

(c) any advisory measures;

(d) the authority responsible for the provision of information; and

(e) remarks.

ENR 5.4—Air navigation obstacles

The list of obstacles affecting air navigation in Area 1, including the—

(a) obstacle identification or designation;

(b) type of obstacle;

(c) obstacle position, represented by geographical coordinates in degrees, minutes and seconds;

(d) obstacle elevation and height to the nearest metre or foot;

(e) type and colour of obstacle lighting where applicable; and

(f) if appropriate, an indication that the list of obstacles is available in electronic form, and a reference to GEN 3.1.6.

NOTE 1: *An obstacle whose height above the ground is one hundred metres and higher is considered an obstacle for Area 1.*

NOTE 2: *Specifications governing the determination and reporting (accuracy of field work and data integrity) of positions (latitude and longitude) and elevations/heights for obstacles in Area 1 are given in Tables 1 and 2 of Appendix 5 of Schedule 1.*

ENR 5.5—Aerial sporting and recreational activities

A brief description, supplemented by graphic portrayal where appropriate, of intensive aerial sporting and recreational activities together with conditions under which they are carried out, including—

(a) the designation and geographical coordinates of the lateral limits in degrees, minutes and seconds if inside and in degrees and minutes if outside control area or control zone boundaries;

(b) the vertical limits of the aerial, sporting and recreational activities;

(c) the operator or user telephone number; and

(d) remarks.

Note 1: The time of activity must be indicated in the remakrs section.

Note 2: This paragraph may be subdivided into different sections for each different category of activity, giving the indicated details in each case.

ENR 5.6—Bird migration and areas with sensitive fauna

A description, supplemented by charts where practicable, of movements of birds associated with migration, including migration routes and permanent resting areas and areas with sensitive fauna.

ENR 6.—*EN ROUTE* CHARTS

En route Chart—ICAO and index charts to be included in this section.

PART 3—AERODROMES (AD)

Where an AIP is produced and made available in more than one volume with each having a separate amendment and supplement service, a separate preface, record of AIP Amendments, record of AIP Supplements, checklist of AIP pages and list of current hand amendments must be included in each volume. In the case of an AIP being published as one volume, the annotation "not applicable" must be entered against each of the above subsections.

AD 0.6—TABLE OF CONTENTS TO PART 3

A list of sections and subsections contained in part 3—Aerodromes.

AD 1.—AERODROMES AND HELIPORTS

INTRODUCTION

AD 1.1—Availability of Aerodrome and Heliport

A brief description of the authority responsible for aerodromes and heliports, including—

(a) the general conditions under which aerodromes and heliports and associated facilities are available for use;

(b) a statement concerning the ICAO documents on which the services are based and a reference to the AIP location where differences, if any, are listed;

(c) regulations, if any, concerning civil use of military air bases;

(d) the general conditions under which the low visibilty procedures applicable to Category II and Category III operations at aerodromes, if any, are applied;

(e) friction measuring device used and the runway friction level below which the Director General will declare the runway to be slippery when wet; and

(f) other information of a similar nature.

AD 1.2—RESCUE AND FIREFIGHTING SERVICES AND SNOW PLAN

AD 1.2.1—Rescue and firefighting services

A brief description of rules governing the establishment of rescue and firefighting services at aerodromes and heliports available for public use together with an indication of rescue and fire-fighting categories established by the aerodrome authority.

AD 1.3—Index to aerodromes and heliports

A list, supplemented by graphic portrayal, of aerodromes and heliports within Trinidad and Tobago, including the—

(a) aerodrome or heliport name and ICAO location indicator;

(b) type of traffic permitted to use the aerodrome or heliport such as international or national, IFR or VFR, scheduled or non-scheduled and private; and

(c) reference to AIP, Part 3 subsection in which the aerodrome and heliport details are presented.

AD 1.4—Grouping of aerodromes and heliports

A brief description of the criteria applied by the Authority in grouping aerodromes and heliports such as international or national; primary or secondary, major or other and civil or military for the purpose of the production, distribution and provision of information.

AD 1.5—Status of Certification of Aerodromes

A list of aerodromes in Trinidad and Tobago, indicating the status of certification, including—

(a) aerodrome name and ICAO location indicator;

(b) date if where applicable, validity of certification; and

(c) any remarks.

AD 2.—AERODROMES

In this Part, the four asterisks "****" appearing at each heading, is to be replaced by the relevant ICAO location indicator.

*****AD 2.1—Aerodrome location indicator and name*

The ICAO location indicator allocated to the aerodrome and the name of aerodrome must be provided. An ICAO location indicator must be an integral part of the referencing system applicable to all subsections in section AD 2.

*****AD 2.2—Aerodrome geographical and administrative data*

Aerodrome geographical and administrative data including—

(a) the aerodrome reference point represented by geographical coordinates in degrees, minutes and seconds and its site;

(b) the direction and distance of aerodrome reference point from centre of the city or town which the aerodrome serves;

(c) the aerodrome elevation to the nearest metre or foot, and reference temperature;

(d) the geoid undulation at the aerodrome elevation position to the nearest metre or foot;

(e) the magnetic variation to the nearest degree, date of information and annual change;

(f) name of aerodrome operator, address, telephone, telefax, e-mail address, AFS address and where available, website address;

(g) the types of traffic permitted to use the aerodrome such as IFRNVFR; and

(h) remarks.

*****AD 2.3—Operational hours*

A detailed description of the hours of operation of services at the aerodrome, such as—

(a) aerodrome operator;

(b) customs and immigration;

(c) health and sanitation;

(d) AIS briefing office;

(e) ATS reporting office;

(f) MET briefing office;

(g) air traffic service;

(h) fuelling;

(i) handling;

(j) security;

(k) de-icing where applicable; and

(l) remarks.

*****AD 2.4—Handling services and facilities*

A detailed description of the handling services and facilities available at the aerodrome, such as—

(a) cargo-handling facilities;

(b) fuel and oil types;

(c) fuelling facilities and capacity;

(d) de-icing facilities where available;

(e) hangar space for visiting aircraft;

(f) repair facilities for visiting aircraft; and

(g) remarks.

*****AD 2.5—Passenger facilities*

A brief description of passenger facilities available at the aerodrome, such as—

(a) hotels at or in the vicinity of aerodrome;

(b) restaurants at or in the vicinity of aerodrome;

(c) transportation options;

(d) medical facilities;

(e) banks and post offices at or in the vicinity of aerodrome;

(f) tourist offices; and

(g) remarks.

*****AD 2.6—Rescue and firefighting services*

A detailed description of the rescue and firefighting services and equipment available at the aerodrome, including—

(a) aerodrome category for firefighting;

(b) rescue equipment;

(c) capability for removal of disabled aircraft; and

(d) remarks.

*****AD 2.7—Seasonal availability—clearing*

A detailed description of the equipment and operational priorities established for the clearance of aerodrome movement areas, including—

(a) the type of clearing equipment;

(b) clearance priorities; and

(c) remarks.

*****AD 2.8—Aprons, taxiways and check locations or positions data*

Details related to the physical caracteristics of aprons, taxiways and check locations or positions of designated checkpoints, including—

(a) the surface and strength of aprons;

(b) the width, surface and strength of taxiways;

(c) the location and elevation to the nearest metre or foot of altimeter checkpoints;

(d) the location of VOR checkpoints;

(e) the position of INS checkpoints in degrees, minutes, seconds and hundredths of seconds; and

(f) remarks.

If check locations or positions are shown on an aerodrome chart, a note to that effect must be provided under this subsection.

*****AD 2.9—Surface movement, guidance and control system and markings*

Brief description of the surface movement, guidance and control system and runway and taxiway markings, including—

(a) the use of aircraft stand identification signs, taxiway guide lines and visual docking or parking guidance system at aircraft stands;

(b) the runway and taxiway markings and lights;

(c) stop bars where applicable; and

(d) remarks.

*****AD 2.10—Aerodrome obstacles*

A detailed description of obstacles, in respect of—

(1) obstacles in Area 2 as follows:

(a) obstacle identification or designation;

(b) type of obstacle;

(c) obstacle position, represented by geographical coordinates in degrees, minutes, seconds and tenths of seconds;

(d) obstacle elevation and height to the nearest metre or foot;

(e) obstacle marking, and type and colour of obstacle lighting where applicable;

(f) if appropriate, an indication that the list of obstacles is available in electronic form, and a reference to GEN 3.1.6; and

(g) NIL indication, if appropriate.

NOTE 1: *Clause 2(2) of Part H, provides a description of Area 2 while, Figure A-2 of the Appendix of Part H contains graphical illustrations of obstacle data collection surfaces and criteria used to identify obstacles in Area 2.*

NOTE 2: *Specifications governing the determination and reporting accuracy of field word and data integrity of positions latitude and longitude and elevations for obstacles in Area 2 are given in Tables 1 and 2 in Appendix 5 of Schedule 1, and Tables A5-1 and A5-2, in Appendix 5, Volume 1 of Appendix 14, respectively.*

(2) The absence of an Area 2 data set for the aerodrome is to be clearly stated and obstacle data are to be provided for—

(a) obstacles that penetrate the obstacle limitation surfaces;

(b) obstacles that penetrate the take-off flight path area obstacle identification surface; and

(c) other obstacles assessed as being hazardous to air navigation.

(3) Indication that information on obstacles in Area 3 is not provided, or where provided, the following information is given:

(a) the obstacle identification or designation;

(b) the type of obstacle;

(c) the obstacle position, represented by geographical coordinates in degrees, minutes, seconds and tenths of seconds;

(d) the obstacle elevation and height to the nearest metre or foot;

(e) the obstacle marking, and type and colour of obstacle lighting where applicable;

(f) if appropriate, an indication that the list of obstacles is available in electronic form, and a reference to GEN 3.1.6; and

(g) a NIL indication, if appropriate.

NOTE 1: *Subclause 2(3) of Part H, provides a description of Area 3 while Figure A8-3 of Appendix 8 contains graphical illustrations of obstacle data collection surfaces and criteria used to identify obstacles in Area 3.*

NOTE 2: *Specifications governing the determination and reporting accuracy of field work and data integrity of positions latitude and longitude and elevations for obstacles in Area 3 are given in Appendix 5, Volume 1 of Annex 14 and Tables A5-1 and A5-2, respectively.*

*****AD 2.11—Meteorological information provided*

A detailed description of meteorological information provided at the aerodrome and an indication of which meteorological office is responsible for the service enumerated, including—

(a) the name of the associated meteorological office;

(b) the hours of service and, where applicable, the designation of the responsible meteorological office outside these hours;

(c) the office responsible for preparation of TAFs and periods of validity and interval of issuance of the forecasts;

(d) the availability of the trend forecasts for the aerodrome, and interval of issuance;

(e) the information on how briefing or consultation is provided;

(f) types of flight documentation supplied and the language used in flight documentation;

(g) charts and other information displayed or available for briefing or consultation;

(h) supplementary equipment available for providing information on meteorological conditions, such as weather radar and receiver for satellite images;

(i) the ATS unit provided with meteorological information; and

(j) any additional information such as limitation of service.

*****AD 2.12—Runway physical characteristics*

A detailed description of runway physical characteristics for each runway, including—

(a) the designations;

(b) true bearings to one-hundreth of a degree;

(c) the dimensions of runways to the nearest metre or foot;

(d) the strength of pavement to include PCN and associated data and surface of each runway and associated stopways;

(e) the geographical coordinates in degrees, minutes, seconds and hundreths of seconds for each threshold and runway end, and geoid undulation of—

(i) thresholds of a non-precision approach runway to the nearest metre or foot; and

(ii) thresholds of a precision approach runway to the nearest tenth of a metre or tenth of a foot;

(f) elevations of—

(i) thresholds of a non-precision approach runway to the nearest metre or foot; and

(ii) thresholds and the highest elevation of the touchdown zone of a precision approach runway to the nearest tenth of a metre or tenth of a foot;

(g) the slope of each runway and associated stopways;

(h) the dimensions of stopway where applicable to the nearest metre or foot;

(i) the dimensions of clearway where applicable to the nearest metre or foot;

(j) the dimensions of strips;

(k) the existence of an obstacle-free zone; and

(l) remarks.

*****AD 2.13—Declared distances*

A detailed description of declared distances to the nearest metre or foot for each direction of each runway, including—

(a) the runway designator;

(b) the take-off run available;

(c) the take-off distance available;

(d) the accelerate-stop distance available;

(e) the landing distance available; and

(f) remarks.

Where a runway direction cannot be used for take-off or landing, or both, because it is operationally forbidden, then this must be declared and the words "not usable" or the abbreviation "NU" entered.

*****AD 2.14—Approach and runway lighting*

A detailed description of approach and runway lighting, including—

(a) the runway designator;

(b) the type, length and intensity of approach lighting system;

(c) the runway threshold lights, colour and wing bars;

(d) the type of visual approach slope indicator system;

(e) the length of runway touchdown zone lights;

(f) the length, spacing, colour and intensity of runway centre line lights;

(g) the length, spacing, colour and intensity of runway edge lights;

(h) the colour of runway end lights and wing bars;

(i) the length and colour of stopway lights; and

(j) remarks.

*****AD 2.15—Other lighting, secondary power supply*

A description of other lighting and secondary power supply, including—

(a) the location, characteristics and hours of operation of aerodrome beacon or identification beacon where applicable;

(b) the location and lighting where applicable of anemometer or landing direction indicator;

(c) the taxiway edge and taxiway centre line lights;

(d) secondary power supply including switch-over time; and

(e) remarks.

*****AD 2.16—Helicopter landing area*

A detailed description of helicopter landing area provided at the aerodrome, including—

(a) the geographical coordinates in degrees, minutes, seconds and hundredths of seconds and geoid undulation of the geometric centre of touchdown and lift-off or of each threshold of final approach and take-off area where appropriate—

(i) for non-precision approaches, to the nearest metre or foot; and

(ii) for precision approaches, to the nearest tenth of a metre or tenth of a foot;

(b) the TLOF and FATO area elevation—

(i) for non-precision approaches, to the nearest metre or foot; and

(ii) for precision approaches, to the nearest tenth of a metre or tenth of a foot;

(c) the TLOF and FATO area dimensions to the nearest metre or foot, surface type, bearing strength and marking;

(d) true bearings to one-hundreth of a degree of FATO;

(e) the declared distances available, to the nearest metre or foot;

(f) the approach and FATO lighting; and

(g) remarks.

*****AD 2.17—Air traffic services airspace*

A detailed description of ATS airspace organized at the aerodrome, including—

(a) the airspace designation and geographical coordinates in degrees, minutes and seconds of the lateral limits;

(b) the vertical limits;

(c) the airspace classification;

(d) the call sign and language of the ATS unit providing service;

(e) the transition altitude; and

(f) remarks.

*****AD 2.18—Air traffic services communication facilities*

A detailed description of air traffic services communication facilities established at the aerodrome, including—

(a) the service designation;

(b) the call sign;

(c) channel;

(d) logon address, as appropriate;

(e) hours of operation; and

(f) remarks.

*****AD 2.19—Radio navigation and landing aids*

A detailed description of radio navigation and landing aids associated with the instrument approach and the terminal area procedures at the aerodrome, including—

(a) the type of aids, magnetic variation to the nearest degree, as appropriate, and type of supported operation for ILS or MLS, basic GNSS, SBAS, and GBAS and for VOR, ILS and MLS also station declination to the nearest degree used for technical line-up of the aid;

(b) the identification, if required;

(c) the frequency, as appropriate;

(d) the hours of operation, as appropriate;

(e) the geographical coordinates in degrees, minutes, seconds and tenths of seconds of the position of the transmitting antenna, as appropriate;

(f) the elevation of the transmitting antenna of DME to the nearest 30 metres or 100 feet and of DME/P to the nearest 3 metres or 10 feet; and

(g) remarks.

When the same aid is used for both *en route* and aerodrome purposes, a description must also be given in section ENR 4. Where the GBAS serves more than one aerodrome, description of the aid must be provided under each aerodrome. Where the operating authority of the facility is not the Authority, the name of the operating authority and facility coverage must be indicated in the remarks column.

*****AD 2.20—Local traffic regulations*

A detailed description of regulations applicable to the traffic at the aerodrome including standard routes for taxiing aircraft, parking regulations, school and training flights and similar but excluding flight procedures.

*****AD 2.21—Noise abatement procedures*

A detailed description of noise abatement procedures established at the aerodrome.

*****AD 2.22—Flight procedures*

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.

*****AD 2.23—Additional information*

Additional information at the aerodrome, such as an indication of bird concentrations at the aerodrome, together with an indication of significant daily movement between resting and feeding areas, to the extent practicable.

*****AD 2.24—Charts related to an aerodrome*

Charts related to an aerodrome are to be included in the following order:

(a) Aerodrome and Heliport Chart—ICAO;

(b) Aircraft Parking and Docking Chart—ICAO;

(c) Aerodrome Ground Movement Chart—ICAO;

(d) Aerodrome Obstacle Chart—ICAO Type A;

(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.

Where some of the charts are not produced, a statement to this effect must be given in section GEN 3.2, Aeronautical charts.

AD 3.—HELIPORTS

When a helicopter landing area is provided at the aerodrome, associated data must be listed only under ****AD 2.16.

*****AD 3.1—Heliport location indicator and name*

The ICAO location indicator assigned to the heliport and the name of heliport must be provided. An ICAO location indicator must be an integral part of the referencing system applicable to all subsections in section AD 3.

*****AD 3.2—Heliport geographical and administrative data*

Heliport geographical and administrative data shall be provided, including—

(a) the heliport reference point represented by geographical coordinates in degrees, minutes and seconds and its site;

(b) the direction and distance of heliport reference point from centre of the city or town which the heliport serves;

(c) the heliport elevation to the nearest metre or foot, and reference temperature;

(d) the geoid undulation at the heliport elevation position to the nearest metre or foot;

(e) the magnetic variation to the nearest degree, date of information and annual change;

(f) name of heliport operator, address, telephone, telefax, e-mail address, AFS address and, where available, website address;

(g) the types of traffic permitted to use the heliport such as IFR or VFR; and

(h) remarks.

*****AD 3.3—Operational hours*

A detailed description of the hours of operation of services at the heliport, such as—

(a) heliport operator;

(b) customs and immigration;

(c) health and sanitation;

(d) AIS briefing office;

(e) ATS reporting office;

(f) MET briefing office;

(g) air traffic service;

(h) fuelling;

(i) handling;

(j) security;

(k) de-icing, as applicable; and

(l) remarks.

*****AD 3.4—Handling services and facilities*

A detailed description of the handling services and facilities available at the heliport, such as—

(a) cargo-handling facilities;

(b) fuel and oil types;

(c) fuelling facilities and capacity;

(d) de-icing facilities;

(e) hangar space for visiting helicopters;

(f) repair facilities for visiting helicopters; and

(g) remarks.

*****AD 3.5—Passenger facilities*

A brief description of passenger facilities available at the heliport, such as—

(a) hotels at or in the vicinity of the heliport;

(b) restaurants at or in the vicinity of the heliport;

(c) transportation options;

(d) medical facilities;

(e) banks and post offices at or in the vicinity of the heliport;

(f) tourist offices; and

(g) remarks.

*****AD 3.6—Rescue and firefighting services*

A detailed description of the rescue and firefighting services and equipment available at the heliport, including—

(a) the heliport category for firefighting;

(b) the rescue equipment;

(c) the capability for removal of disabled helicopter; and

(d) remarks.

*****AD 3.7—Seasonal availability—clearing*

A detailed description of the equipment and operational priorities established for the clearance of heliport movement areas, including—

(a) the types of clearing equipment;

(b) the clearance priorities; and

(c) remarks.

*****AD 3.8—Aprons, taxiways and check locations/positions data*

A detailed description of the physical characteristics of aprons, taxiways and locations or positions of designated checkpoints, including—

(a) the surface and strength of aprons, helicopter stands;

(b) the width, surface type and designation of helicopter ground taxiways;

(c) the width and designation of helicopter air taxiway and air transit route;

(d) the location and elevation to the nearest metre or foot of altimeter checkpoints;

(e) the location of VOR checkpoints;

(f) the position of INS checkpoints in degrees, minutes, seconds and hundredths of seconds; and

(g) remarks.

Where check locations or positions are presented on a heliport chart, a note to that effect must be provided under this subsection.

*****AD 3.9—Markings and markers*

A brief description of final approach and take-off area and taxiway markings and markers, including—

(a) the final approach and take-off markings;

(b) the taxiway markins, air taxiway markers and air transit route markers; and

(c) remarks.

*****AD 3.10—Heliport obstacles*

Detailed description of obstacles, including—

(a) obstacle identification or designation;

(b) type of obstacle;

(c) obstacle position, represented by geographical coordinates in degrees, minutes, seconds and tenths of seconds;

(d) obstacle elevation and height to the nearest metre or foot;

(e) obstacle marking, and type and colour of obstacle lighting (if any);

(f) if appropriate, an indication that the list of obstacles is available in electronic form, and a reference to GEN 3.1.6; and

(g) NIL indication, if appropriate.

*****AD 3.11—Meteorological information provided*

A detailed description of meteorological information provided at the heliport and an indication of which meteorological office is responsible for the service enumerated, including the—

(a) the name of the associated meteorological office;

(b) the hours of service and, where applicable, the designation of the responsible meteorological office outside these hours;

(c) the office responsible for preparation of TAFs, and periods of validity of the forecasts;

(d) the availability of the trend forecasts for the heliport, and interval of issuance;

(e) the information on how briefing and/or consultation is provided;

(f) the type of flight documentation supplied and language used in flight documentation;

(g) the charts and other information displayed or available for briefing or consultation;

(h) the supplementary equipment available for providing information on meteorological conditions, such as weather radar and receiver for satellite images;

(i) the ATS units provided with meteorological information; and

(j) any additional information such as limitation of service.

*****AD 3.12—Heliport data*

A detailed description of the heliport dimensions and related information, including the—

(a) the heliport type such as surface-level, elevated or helideck;

(b) the TLOF area dimensions to the nearest metre or foot;

(c) the true bearings to one-hundredth of a degree of FATO area;

(d) the dimensions to the nearest metre or foot of FATO, and surface type;

(e) the surface and bearing strength in tonnes of TLOF;

(f) the geographical coordinates in degrees, minutes, seconds and hundredths of seconds and geoid undulation of the geometric centre of TLOF or of each threshold of FATO where appropriate—

(i) for non-precision approaches, to the nearest metre or foot; and

(ii) for precision approaches, to the nearest tenth of a metre or tenth of a foot;

(g) the TLOF and FATO slope and elevation—

(i) for non-precision approaches to the nearest metre or foot; and

(ii) for precision approaches to the nearest tenth of a metre or tenth of a foot;

(h) the dimensions of safety area;

(i) the dimensions, to the nearest metre or foot, of helicopter clearway;

(j) the existence of an obstacle-free sector; and

(k) remarks.

*****AD 3.13—Declared distances*

A detailed description of declared distances to the nearest metre or foot, where relevant for a heliport, including the—

(a) take-off distance available;

(b) rejected take-off distance available;

(c) landing distance available; and

(d) remarks.

*****AD 3.14—Approach and FATO lighting*

A detailed description of approach and FATO lighting, including—

(a) the type, length and intensity of approach lighting system;

(b) the type of visual approach slope indicator system;

(c) the characteristics and location of FATO area lights;

(d) the characteristics and location of aiming point lights;

(e) the characteristics and location of TLOF lighting system; and

(f) remarks.

*****AD 3.15—Other lighting, secondary power supply*

A description of other lighting and secondary power supply, including—

(a) the location, characteristics and hours of operation of heliport beacon;

(b) the location and lighting of WDI;

(c) the taxiway edge and taxiway centre line lights;

(d) the secondary power supply including switch-over time; and

(e) remarks.

*****AD 3.16—Air traffic services airspace*

A detailed description of ATS airspace organized at the heliport, including—

(a) the airspace designation and geographical coordinates in degrees, minutes and seconds of the lateral limits;

(b) the vertical limits of the ATS airspace at the heliport;

(c) the airspace classificaiton;

(d) the call sign and language of ATS unit providing service;

(e) the transition altitude; and

(f) remarks.

*****AD 3.17—Air traffic services communication facilities*

A detailed description of air traffic services communication facilities established at the heliport, including—

(a) the service designation;

(b) the call sign;

(c) the frequency;

(d) the hours of operation; and

(e) remarks.

AD 3.18—Radio navigation and landing aids

A detailed description of radio navigaiton and landing aids associated with the instrument approach and the terminal area procedures at the heliport, including—

(a) the type of aids, magnetic variation for VOR, station declination used for technical line-up of the aid to the nearest degree, and type of operation for ILS, MLS, basic GNSS, SBAS, and GBAS;

(b) the identification of the radio navigation and landing aids, if required;

(c) the frequency, as appropriate;

(d) the hours of operation, as appropriate;

(e) the geographical coordinates in degrees, minutes, seconds and tenths of seconds of the position of the transmitting antenna, as appropraite;

(f) the elevation of transmitting antenna of DME to the nearest 100 feet and of DME/P to the nearest 10 feet; and

(g) remarks.

Where the same aid is used for both *en route* and heliport purposes, a description must also be given in section ENR 4. Where the ground-based augmentation system (GBAS) serves more than one heliport, description of the aid must be provided under each heliport. Where the operating authority of the facility is not the Authority, the name of the operating authority and facility coverage must be indicated in the remarks column.

*****AD 3.19—Local traffic regulations*

A detailed description of regulations applicable to traffic at the heliport, including standard routes for taxiing helicopters, parking regulations, school flights, training flights and other similar flights but excluding flight procedures.

*****AD 3.20—Noise abatement procedures*

A detailed description of noise abatement procedures established at the heliport.

*****AD 3.21—Flight procedures*

A detailed description of the conditions and flight procedures, including radar and/or ADS-B procedures, established on the basis of airspace organization 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.

*****AD 3.22—Additional information*

Additional information about the heliport, such as an indication of bird concentrations at the heliport together with an indication of significant daily movement between resting and feeding areas, to the extent practicable.

*****AD 3.23—Charts related to a heliport*

Charts related to a heliport shall be included in the following order:

(a) Aerodrome and Heliport Chart—ICAO;

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

(c) Standard Departure Chart—Instrument—ICAO;

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

(e) Standard Arrival Chart—Instrument—ICAO;

(f) ATC Surveillance Minimum Altitude Chart—ICAO;

(g) Instrument Approach Chart—ICAO for each procedure type;

(h) Visual Approach Chart—ICAO; and

(i) A chart showing bird concentrations in the vicinity of heliport.

Where some of the charts are not produced, a statement to this effect must be given in section *GEN 3.2—Aeronautical charts.*

PART C

(Regulation 21)

NOTAM

The Standards required to be met for NOTAM shall be as follows:

Origination

1. (1) A NOTAM shall be originated and issued promptly where—

(a) the information to be distributed is of a temporary nature and of short duration; or

(b) operationally significant permanent changes, or temporary changes of long duration are made at short notice.

(2) A NOTAM shall be originated and issued in respect of the following:

(a) establishment, closure or significant changes in operation of aerodrome and heliport or runways;

(b) establishment, withdrawal and significant changes in operation of aeronautical services such as AGA, AIS, ATS, CNS, MET and SAR;

(c) establishment, withdrawal and significant changes in operational capability of radio navigation and air-ground communication services which includes—

(i) interruption or return to operation;

(ii) change of frequencies;

(iii) change in notified hours of service;

(iv) change of identification;

(v) change of orientation such as directional aids;

(vi) change of location;

(vii) power increase or decrease amounting to fifty per cent or more;

(viii) change in broadcast schedules or contents; or

(ix) irregularity or unreliability of operation of any radio navigation and air-ground communication services;

(d) establishment, withdrawal or significant changes made to visual aids;

(e) interruption of or return to operation of major components of aerodrome lighting systems;

(f) establishment, withdrawal or significant changes made to procedures for air navigation services;

(g) occurrence or correction of major defects or impediments in the manoeuvring area;

(h) changes to and limitations on availability of fuel, oil and oxygen;

(i) major changes to search and rescue facilities and services available;

(j) establishment, withdrawal or return to operation of hazard beacons marking obstacles to air navigation;

(k) changes in regulations requiring immediate action, such as prohibited areas for SAR action;

(l) presence of hazards which affect air navigation including obstacles, military exercises, displays, races and major parachuting events outside promulgated sites;

(m) erecting or removal of, or changes to, obstacles to air navigation in the take-off and climb, missed approach, approach areas and runway strip;

(n) establishment or discontinuance, including activation or deactivation as applicable, or changes in the status of prohibited, restricted or danger areas;

(o) establishment or discontinuance of areas or routes or portions of the areas or routes where the possibility of interception exists and where the maintenance of guard on the VHF emergency frequency 121.5 MHz is required;

(p) allocation, cancellation or change of location indicators;

(q) significant changes in the level of protection normally available at an aerodrome or a heliport for rescue and firefighting purposes;

(r) presence or removal of, or significant changes in, hazardous conditions due to snow, slush, ice, radioactive material, toxic chemicals, volcanic ash deposition or water on the movement area;

(s) outbreaks of epidemics necessitating changes in notified requirements for inoculations and quarantine measures;

(t) forecasts of solar cosmic radiation, where provided;

(u) an operationally significant change in volcanic activity, the location, date and time of volcanic eruptions and horizontal and vertical extent of volcanic ash cloud, including direction of movement, flight levels and routes or portions of routes which could be affected;

(v) release into the atmosphere of radioactive materials or toxic chemicals following a nuclear or chemical incident, the location, date and time of the incident, the flight levels and routes or portion of routes which could be affected and the direction of movement;

(w) establishment of operations of humanitarian relief missions, such as those undertaken under the auspices of the United Nations, together with procedures and or limitations which affect air navigation; and

(x) implementation of short-term contingency measures in cases of disruption, or partial disruption, of air traffic services and related supporting services.

(3) The following information shall not be notified by NOTAM:

(a) routine maintenance work on aprons and taxiways which does not affect the safe movement of aricraft;

(b) runway marking work, where aircraft operations can safely be conducted on other available runways, or the equipment used can be removed where necessary;

(c) temporary obstructions in the vicinity of aerodrome and heliport that do not affect the safe operation of aircraft;

(d) partial failure of aerodrome and heliport lighting facilities where the partial failure does not directly affect aircraft operations;

(e) partial temporary failure of air-ground communications where suitable alternative frequencies are known to be available and are operative;

(f) the lack of apron marshalling services and road traffic control;

(g) the unserviceability of location, destination or other instruction signs on the aerodrome movement area;

(h) parachuting where in uncontrolled airspace under VFR, when controlled, at promulgated sites or within danger or prohibited areas; and

(i) other information of a similar temporary nature.

(4) At least seven days' advance notice shall be given of the activation of established danger, restricted or prohibited areas and of activities requiring temporary airspace restrictions other than for emergency operatons.

(5) NOTAM notifying unserviceability of aids to air navigation, facilities or communication services shall give an estimate of the period of unserviceability or the time at which restoration of service is expected.

(6) Where an AIP amendment or an AIP supplement is published in accordance with AIRAC procedures, a NOTAM shall be originated giving a brief description of the contents, the effective date and time and the reference number of the amendment or supplement.

(7) The NOTAM under subclause (5) shall come into force on the effective date and time as the amendment or supplement became effective and remains valid in the pre-flight information bulletin for a period of fourteen days.

General specifications

2. (1) Except as otherwise provided in subclauses (3) and (4), each NOTAM shall contain the information in the order shown in the NOTAM Format in Appendix 3 of this Part.

(2) Text of NOTAM shall be composed of the significations and uniform abbreviated phraseology assigned to the ICAO NOTAM Code complemented by ICAO abbreviations, indicators, identifiers, designators, call signs, frequencies, figures and plain language.

(3) When NOTAM is selected for international distribution, English text shall be included for those parts expressed in plain language.

(4) Information concerning an operationally significant change in volcanic activity, a volcanic eruption or volcanic ash cloud when reported by means of an ASHTAM, shall contain the information in the order shown in the ASHTAM Format in Appendix 1 of this Part.

(5) The NOTAM originator shall allocate to each NOTAM a series identified by a letter and a consecutive four-digit number based on the calendar year followed by a stroke and a two-digit number for the year.

(6) Where errors occur in a NOTAM, a new number to replace the erroneous NOTAM shall be issued or the erroneous NOTAM shall be cancelled and a new NOTAM issued.

(7) Where a NOTAM is issued which cancels or replaces a previous NOTAM, the series and number of the previous NOTAM shall be indicated so the series, location indicator and subject of both NOTAM are the same and only one NOTAM is cancelled or replaced by another NOTAM.

(8) Each NOTAM shall—

(a) deal with only one subject and one condition of the subject;

(b) be as brief as possible and compiled so that the meaning of the NOTAM is clear without the need to refer to another document; and

(c) be transmitted as a single telecommunication message.

(9) A NOTAM containing permanent or temporary information of long duration shall carry appropriate AIP or AIP supplement references.

(10) A complete form of Location indicators shall be included in the text of a NOTAM contained in the Location Indicators specified in the ICAO Doc. 7910.

(11) In no case shall an abbreviated form of a location indicator under subclause (11) be used.

(12) Where no ICAO location indicator is assigned to the location, the name of the location spelt in accordance with clause 5(2), shall be entered in plain language.

(13) A checklist of valid NOTAM for each series shall—

(a) be issued as a NOTAM over the AFS at intervals of not more than one month using the NOTAM format specified in Appendix 3 of this Part, one NOTAM issued for each series;

(b) refer to the latest AIP Amendments, AIP Supplements and at least the internationally distributed AIC; and

(c) have the same distribution as the actual message series to which they refer and be clearly identified as checklist.

(14) A monthly printed plain-language list of valid NOTAM, including indications of the latest AIP amendments, AIC issued and a checklist of AIP supplements shall be prepared with a minimum of delay and forwarded by the most expeditious means to recipients of the Integrated Aeronautical Information Package.

Distribution

3. (1) NOTAM shall—

(a) be distributed on the basis of a request; and

(b) be prepared in conformity with the relevant provisions of the ICAO communication procedures.

(2) AFS shall, where practicable, be employed for NOTAM distribution.

(3) Where a NOTAM exchange as specified in subclause (5) is sent by means other than the AFS, a six-digit date-time group indicating the date and time of NOTAM origination, and the identification of the originator shall be used, preceding the text.

(4) The Director General shall select the NOTAM that are to be given international distribution.

(5) International exchange of NOTAM shall take place only as mutually agreed between the Authority and the international NOTAM offices concerned.

(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.

(7) The exchanges of NOTAM between international NOTAM offices shall, as far as practicable, be limited to the requirements of the receiving States concerned by means of separate series providing for at least international and domestic flights.

(8) A predetermined distribution system for NOTAM transmitted on the AFS in accordance with Appendix 2 of this Part shall be used where possible, subject to the requirements of subclause (5).

APPENDIX 1

[Part C, Clause 2(5)]

ASHTAM FORMAT

(COM heading)	(PRIORITY INDICATOR)	(ADDRESSES)			
	(DATE AND TIME OF FILING)		(ORIGINATOR'S INDICATOR)		
(Abbreviated heading)	(VA*2 SERIAL NUMBER)		(LOCATION INDICATOR)	DATE/TIME OF ISSUANCE	(OPTIONAL GROUP)
	V A *[2] * [2]				
ASHTAM	(Serial number)				
(FLIGHT INFORMATION REGION AFFECTED)					A)
(DATE/TIME (UTC) OF ERUPTION)					B)
(VOLCANO NAME AND NUMBER)					C)
(VOLCANO LATITUDE/LONGITUDE OR VOLCANO RADIAL AND DISTANCE FROM NAVAID)					D)
(VOLCANO LEVEL OF ALERT COLOUR CODE, INCLUDING ANY PRIOR LEVEL OF ALERT COLOUR CODE)[3]					E)
(EXISTENCE AND HORIZONTAL/VERTICAL EXTENT OF VOLCANIC ASH CLOUD)[4]					F)
(DIRECTION OF MOVEMENT OF ASH CLOUD)[4]					G)
(AIR ROUTES OR PORTIONS OF AIR ROUTES AND FLIGHT LEVELS AFFECTED)					H)
(CLOSURE OF AIRSPACE AND/OR AIR ROUTES OR PORTIONS OF AIR ROUTES, AND ALTERNATIVE AIR ROUTES AVAILABLE)					I)
(SOURCE OF INFORMATION)					J)
(PLAIN-LANGUAGE REMARKS)					K)

NOTES:
1. See also Appendix 2 regarding addressee indicators used in predetermined distribution systems.
2. *Enter ICAO nationality letter as given in ICAO Doc 7910, Part 2.
3. See paragraph 3.5 below.
4. Advice on the existence, extent and movement of volcanic ash cloud G) and H) may be obtained from the Volcanic Ash Advisory Centre(s) responsible for the FIR concerned.
5. Item titles in brackets ( ) not to be transmitted.

SIGNATURE OF ORIGINATOR (not for transmission)

INSTRUCTIONS FOR THE COMPLETION OF THE ASHTAM FORMAT

1. General

(a) the ASHTAM provides information on the status of activity of a volcano when a change in its activity is, or is expected to be of operational significance. This information is provided using the volcano level of alert colour code given in clause 3*(e)* below;

(b) in the event of a volcanic eruption producing ash cloud of operational significance, the ASHTAM also provides information on the location, extent and movement of the ash cloud and the air routes and flight levels affected;

(c) issuance of an ASHTAM giving information on a volcanic eruption, in accordance with section 3 below, should not be delayed until complete information (A) to (K) is available but should be issued immediately following receipt of notification that an eruption has occurred or is expected to occur, or a change in the status of activity of a volcano of operational significance has occurred or is expected to occur, or an ash cloud is reported. In the case of an expected eruption, and hence no ash cloud evident at that time, items (A) to (E) should be completed and items (F) to (I) indicated as "not applicable". Similarly, if a volcanic ash cloud is reported, e.g., by special air-report, but the source volcano is not known at that time, the ASHTAM should be issued initially with items (A) to (E) indicated as "unknown", and items (F) to (K) completed, as necessary, based on the special air-report, pending receipt of further information. In other circumstances, if information for a specific field (A) to (K) is not available indicate "Nil";

(d) the maximum period of validity of ASHTAM is twenty-four hours;

(e) new ASHTAM must be issued where there is a change in the level of alert.

2. Abbreviated heading

Following the usual AFTN communications header, the abbreviated heading "TT AAiiii CCCC MMYYGGgg (BBB)" is included to facilitate the automatic processing of ASHTAM messages in computer data banks. The explanation of these symbols are—

TT = data designator for ASHTAM = VA;

AA = geographical desginator for States, e.g. NZ = New Zealand [*see* Location Indicators (Doc 7910), Part 2, Index to Nationality Letters for Location Indicators];

iiii = ASHTAM serial number in a four-figure group;

CCCC = four-letter location indicator of the flight information region concerned [*see* Location Indicators (Doc 7910), Part 5, addresses of centres in charge of FIR/UIR];

MMYYGGgg = date/time of report, whereby:

MM = month, e.g. January = 01, December = 12

YY = day of the month

GGgg = time in hours (GG) and minutes (gg) UTC;

(BBB) = Optional group for correction to an ASHTAM message previously disseminated with the same serial number = COR.

NOTE: *Brackets in (BBB) are used to indicate that this group is optional.*

Example: Abbreviated heading of ASHTAM for Auckland Oceanic FIR, report on 7th November at 0620 UTC:

VANZ0001 NZZO 11070620

3. Content of ASHTAM

(a) Item A—Flight information region affected, plain-language equivalent of the location indicator given in the abbreviated heading, in this example "Auckland Oceanic FIR";

(b) Item B—Date and time (UTC) of first eruption;

(c) Item C—Name of volcano, and number of volcano as listed in the ICAO Manual on Volcanic Ash, Radioactive Material and Toxic Chemical Clouds (Doc 9691), Appendix H, and on the World Map of Volcanoes and Principal Aeronautical Features;

(d) Item D—Latitude and Longitude of the volcano in whole degrees or radial and distance of volcano from NAVAID (as listed in the ICAO Manual on Volcanic Ash, Radioactive Material and Toxic Chemical Clouds (Doc 9691), Appendix H, and on the World Map of Volcanoes and Principal Aeronautical Features);

(e) Item E—Colour code for level of alert indicating volcanic activity, including any previous level of alert colour code as follows:

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 where 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 activity 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	

(f) Item F—Where volcanic ash cloud of operational significance is reported, indicate the horizontal extent and base and top of the ash cloud using latitude and longitude in whole degrees and altitudes in thousands of metres or feet or radial and distance from source volcano;

(g) Information initially may be based only on special air-report, but subsequent information may be more detailed based on advice from the responsible meteorological watch office and/or volcanic ash advisory centre;

(h) Item G—Indicate forecast direction of movement of the ash cloud at selected levels based on advice from the responsible meteorological watch office and/or volcanic ash advisory centre;

(i) Item H—Indicate air routes and portions of air routes and flight levels affected, or expected to become affected;

(j) Item I—Indicate closure of airspace, air routes or portions of air routes, and availability of alternative routes;

(k) Item J—Source of the information, e.g., "special air-report" or "vulcanological agency", etc. The source of information should always be indicated, whether an eruption has actually occurred or ash cloud reported, or not; and

(l) Item K—Include in plain language any operationally significant information additional to the foregoing.

APPENDIX 2

[Schedule 2 Part C, Clause 3(8)]

PREDETERMINED DISTRIBUTION SYSTEM FOR NOTAM

1. The predetermined distribution system provides for incoming NOTAM and ASHTAM to be channeled through the AFTN direct to designated addresses predetermined by the receiving country concerned while concurrently being routed to the international NOTAM office for checking and control purposes.

2. The addressee indicators for those designated addressees are constituted as follows:

(a) First and second letters:

The first two letters of the location indicator for the ATFN communication centre associated with the relevant international NOTAM office of the receiving country.

(b) Third and fourth letters:

The letters "ZZ" indicating a requirement for special distribution.

(c) Fifth letter:

The fifth letter differentiating between NOTAM (letter "N") and ASHTAM (letter "V").

(d) Sixth and seventh letters:

The sixth and seventh letters, each taken from the series A to Z and denoting the national and/or international distribution list(s) to be used by the receiving AFTN centre.

NOTE: *The fifth, sixth and seventh letters replace the three-letter designator YNY which, in the normal distribution system, denotes an international NOTAM office.*

(e) Eighth letter:

The eighth position letter shall be the filler letter "X" to complete the eight-letter addressee indicator.

3. The Authority shall inform the States from which it received NOTAM of the sixth and seventh letters to be used under different circumstances to ensure proper routing.

APPENDIX 3

[Part C, Clauses 2(1) and (13)]

NOTAM FORMAT

Priority indicator								
Address								
Date and time of filing								
Originator's indicator								
Message series, number and identifier								
NOTAM containing new information	..... (series and number/year)	NOTAMN						
NOTAM replacing a previous NOTAM	..... (series and number/year)	NOTAMR ..... (series and number/year of NOATM to be replaced)						
NOTAM cancelling a previous NOTAM	..... (series and number/year)	NOTAMC ..... (series and number/year of NOTAM to be cancelled)						
Qualifiers								
	FIR	NOTAM Code	Traffic	Purpose	Scope	Lower limit	Upper limit	Coordinates, Radius
Q)		Q)						
Identification of ICAO location indicator in which the facility airspace or condition reported on is located		A)						
Period of Validity								
From (date-time group)	B)							
To (PERM or date-time group)	C)							EST* PERM*
Time Schedule (if applicable)	D)							
Text of NOTAM: Plain-language Entry (using ICAO Abbreviations)								
E)								
Lower Limit	F)							
Upper Limit	G)							
Signature								

* Delete as appropriate

INSTRUCTIONS FOR THE COMPLETION OF THE ASHTAM FORMAT

1. General

The qualifier line Item Q and all identifiers Items A to G inclusive each followed by a closing parenthesis, as shown in the format, shall be transmitted unless there is no entry to be made against a particular identifier.

2. NOTAM numbering

Each NOTAM shall be allocated a series identified by a letter and a four-digit number followed by a stroke and a two-digit number for the year (e.g. A0023/03. Each series shall start on 1st January with the number 0001).

3. Qualifiers Item Q

Item Q is divided in eight fields, each separated by a stroke. An entry shall be made in each field. Examples of how fields are to be filled are shown in the Aeronautical Information Services Manual (Doc 8126). The definition of the field is as follows:

(a) FIR—

(i) where the subject of the information is located geographically within one FIR, the ICAO location indicator shall be that of the FIR concerned. When an aerodrome is situated within an overlying FIR of another State, the first field of Item (Q) shall contain the code for that overlying FIR; or

(ii) where the subject of the information is located geographically with more than one FIR, the FIR field shall be composed of the ICAO nationality letters of the State originating the NOTAM followed by "XX". The ICAO location indicators of the FIRs concerned shall then be listed in Item (A) or indicator of the State or non-governmental agency which is responsible for provision of air navigation service in more than one State;

(b) NOTAM Code

All NOTAM Code groups contain a total of five letters and the first letter is always the letter Q. The second and third letters identify the subject, and the fourth and fifth letters denote the status or condition of the subject reported upon. The two-letter codes for subjects and conditions are those contained in the PANS-ABC (DOC 8400). For combinations of second and third and fourth and fifth letters, the NOTAM Selection Criteria contained in Doc 8126 or insert one of the following combinations, as appropriate:

(i) if the subject is not listed in the NOTAM Code (Doc 8400) or in the NOTAM Selection Criteria (Doc 8126), insert "XX" as the second and third letters (e.g. QXXAK);

(ii) if the condition of the subject is not listed in the NOTAM Code (Doc 8400) or in the NOTAM Selection Criteria (Doc 8126), insert "XX" as the fourth and fifth letters (e.g. QFAXX);

(iii) where a NOTAM containing operationally significant information is issued in accordance with Appendix 4 and Chapter 6 and when it is used to announce existence of AIRAC AIP Amendments or Supplements, insert "TT" as the fourth and fifth letters of the NOTAM Code;

(iv) where a NOTAM is issued containing a checklist of valid NOTAM, insert "KKKK" as the second, third, fourth and fifth letters; and

(v) the following fourth and fifth letters of the NOTAM Code shall be used in NOTAM cancellations:

AK: Resumed normal operation

AL: Operative or Re-operative subject to previously published limitations or conditions

AO: Operational

CC: Completed

CN: Cancelled

HV: Work completed

XX: Plain language

(c) Traffic

I = IFR

V = VFR

K = NOTAM is a checklist

NOTE: *Depending on the NOTAM subject and content, the qualifier field TRAFFIC may contain combined qualifiers. Guidance concerning the combination of TRAFFIC qualifiers with subject and conditions in accordance with the NOTAM Selection Criteria is contained in Doc 8126.*

(d) Purpose

N = NOTAM selected for the immediate attention of aircraft operators

B = NOTAM selected for PIB entry

O = NOTAM concerning flight operations

M = Miscellaneous NOTAM; not subject for a briefing, but it is available on Request

K = NOTAM is a checklist

NOTE: *Depending on the NOTAM subject and content, the qualifier field PURPOSE may contain the combined qualifiers BO or NBO. Guidance concerning the combination of PURPOSE qualifiers with subject and conditions in accordance with the NOTAM Selection Criteria is contained in Doc 8126.*

(e) Scope

A = Aerodrome

E = *En route*

W = Nav Warning

K = NOTAM is a checklist

NOTE: *Depending on the NOTAM subject and content, the qualifier field PURPOSE may contain the combined qualifers BO of NBO. Guidance concerning the combination of PURPOSE qualifers with subject and conditions in accordance with the NOTAM Selection Criteria is contained in Doc 8126.*

(f) LOWER and UPPER:

LOWER and UPPER limits shall only be expressed in flight levels (FL) and shall express the actual vertical limits of the area of influence with the addition of buffers. In the case of navigation warnings and airspace restrictions, values entered shall be consistent with those provided under Items F and G. Where the subject does not contain specific height information, insert "000" for LOWER and "999" for UPPER as default values.

(g) Coordinates, Radius

The latitude and longitude accurate to one minute, as well as a three digit distance figure giving the radius of influence in NM (e.g. 4700N01140E043). Coordinates present approximate centre of circle whose radius encompasses the whole area of influence, and if the NOTAM affects the entire FIR, enter the default value "999" for radius.

4. Item A

Insert the location indicator as contained in ICAO Doc 7910 of the aerodrome or FIR in which the facility, airspace, or condition being reported on is located. More than one FIR or IR may be indicated when appropriate. If there is no available ICAO location indicator, use the ICAO nationality letter as given in ICAO Doc 7910, Part 2, plus "XX" and followed up in Item E by the name, in plain language. If information concerns GNSS, insert the appropriate ICAO location indicator allocated for a GNSS element or the common location indicator allocated for all elements of GNSS (except GBAS).

NOTE: *In the case of GNSS, the location indicator may be used when identifying a GNS element outage (e.g., KNMH for a GPS satellite outage).*

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, comes into force. In the cases of NOTAMR and NOTAMC, the date-time group is the actual date and time of the NOTAM origination. The start of a day shall be indicated by "0000".

6. Item C

With the exception of NOTAMC, a ten-figure day-time group giving year, month, day, hours and minutes in UTC indicating duration of information shall be used unless the information is of a permanent nature in which case the abbreviation "PERM" is inserted instead. The end of the day shall be indicated by "2359" and not "2400". Where the information on timing is uncertain, the approximate duration shall be indicated using a date-time group followed by the abbreviation "EST". Any NOTAM which includes an "EST" shall be cancelled or replaced before the date-time specified in Item C.

7. Item D

Where the hazard, status of operation or condition of facilities being reported on will be active in accordance with a specific time and date schedule between the dates-times indicated in Items (B) and (C), insert such information under Item (D). Where Item (D) exceeds two hundred characters, consideration shall be given to providing such information in a separate, consecutive NOTAM.

NOTE: *Guidance concerning a harmonized definition of Item (D) content is provided in Doc 8126.*

8. Item E

Use decoded NOTAM Code, complemented where necessary by ICAO abbreviations, indicators, identifiers, designators, call signs, frequencies, figures and plain language. When NOTAM is selected for international distribution, English text shall be included for those parts expressed in plain language. This entry shall be clear and concise in order to provide a suitable PIB entry. In the case of NOTAMC, a subject reference and status message shall be included to enable accurate plausibility checks.

9. Items F and G

These items are normally applicable to navigation warnings or airspace restrictions and are usually part of the PIB entry. Insert both lower and upper height limits of activities or restrictions, clearly indicating only one reference datum and unit of measurement. The abbreviations GND or SFC shall be used in Item F to designate ground and surface respectively. The abbreviation UNL shall be used in Item G to designate unlimited.

Note: For NOTAM examples see Doc 8126 and the PANS-ABC (Doc 8400).

PART D

(Regulation 22)

AERONAUTICAL INFORMATION, REGULATION AND CONTROL (AIRAC)

The Standards required to be met for AIRAC shall be as follows:

General specifications

1. (1) Information concerning the circumstances listed in Part 1 of the Appendix shall be distributed under AIRAC, basing establishment, withdrawal or significant changes upon a series of common effective dates at intervals of twenty-eight days, including 14th January, 2010.

(2) Information notified in the AIRAC shall not be changed further for at least another twenty-eight days after the effective date, unless the circumstance notified is of a temporary nature and would not persist for the full period.

(3) Where information has not been submitted by the AIRAC date, a NIL notification shall be originated and distributed by NOTAM or other suitable means, not later than one cycle before the AIRAC effective date concerned.

(4) Implementation dates other than the AIRAC effective dates shall not be used for pre-planned operationally significant changes requiring cartographic work or for updating of navigation databases.

Provision of information in paper copy form

2. In all circumstances, information provided under the AIRAC system shall be published in paper copy form and distributed by the AIS unit at least forty-two days in advance of the effective date with the objective of reaching recipients at least twenty-eight days in advance of the effective date.

Provision of information in electronic form

3. (1) Where the Authority has established an aeronautical database in and thereafter updates the contents of that database concerning the circumstances listed in Part 1 of the Appendix, the Authority shall ensure that the effective dates of the data coincide with the established AIRAC effective dates used for the provision of information in paper copy form.

(2) The information provided in electronic form, concerning the circumstances listed in Part 1 of the Appendix, shall be distributed and made available by the AIS unit so as to reach recipients at least twenty-eight days in advance of the AIRAC effective date.

APPENDIX

INFORMATION TO BE NOTIFIED BY AIRAC

[Part D clauses 1(1), 6 and 7]

PART 1

1. The AIRAC shall provide information on the establishment and withdrawal of, and premeditated significant changes including operational trials as follows:

(a) horizontal and vertical limits and regulations and procedures applicable to—

(i) flight information regions;

(ii) control areas;

(iii) control zones;

(iv) advisory areas;

(v) ATS routes;

(vi) permanent danger, prohibited and restricted areas (including type and periods of activity when known) and ADIZ;

(vii) permanent areas or routes or portions thereof where the possibility of interception exists;

(b) positions, frequencies, call signs, identifiers, known irregularities and maintenance periods of radio navigation aids, communication and surveillance facilities;

(c) holding and approach procedures, arrival and departure procedures, noise abatement procedres and any other pertinent ATS procedures;

(d) transition levels, transition altitudes and minimum sector altitudes;

(e) meteorological facilities including broadcasts and procedures;

(f) runways and stopways;

(g) taxiways and aprons;

(h) aerodrome ground operating procedures including low visibility procedures;

(i) approach and runway lighting; and

(j) aerodrome operating minima, where published by a State.

PART 2

2. The AIRAC shall provide information on the establishment and withdrawal of, and premeditated significant changes to—

(a) position, height and lighting of navigational obstacles;

(b) hours of service: aerodromes, facilities and services;

(c) customs, immigration and health services;

(d) temporary danger, prohibited and restricted areas and navigational hazards, military exercises and mass movements of aircraft; and

(e) temporary areas or routes or portions thereof where the possibility of interception exists.

Part 3

3. The establishment of, and premeditated major changes to—

(a) new aerodromes for international IFR operations;

(b) new runways for IFR operations at international aerodromes;

(c) design and structure of the air traffic services route network;

(d) design and structure of a set of terminal procedures including change of procedure bearings due to magnetic variation change; and

(e) circumstances listed in Part 1 where the entire State or any significant portion thereof is affected or where cross-border coordination is required.

PART E

(Regulation 23)

Aeronautical Information Circulars

The standards required to be met for AIC shall be as follows:

Origination

1. (1) Whenever it is necessary to publish aeronautical information which does not qualify—

(a) under the specifications in clause 1 of Part B for inclusion in an AIP; or

(b) under the specifications in clause 1 of Part C for the origination of a NOTAM,

an AIC shall be originated.

(2) Whenever it is desirable to publish—

(a) a long-term forecast of any major change in legislation, regulations, procedures or facilities;

(b) information of a purely explanatory or advisory nature liable to affect flight safety;

(c) information or notification of an explanatory or advisory nature concerning technical, legislative or purely administrative matters such as—

(i) forecasts of important changes in the air navigation procedures, services and facilities provided;

(ii) forecasts of implementation of new navigational systems;

(iii) significant information arising from aircraft accident or incident investigation which has a bearing on flight safety;

(iv) information on regulations relating to the safeguarding of international civil aviation against acts of unlawful interference;

(v) advice on medical matters of special interest to pilots;

(vi) warnings to pilots concerning the avoidance of physical hazards;

(vii) effect of certain weather phenomena on aircraft operations;

(viii) information on new hazards affecting aircraft handling techniques;

(ix) regulations relating to the carriage of restricted articles by air;

(x) reference to the requirements of, and publication of changes in, national legislation;

(xi) aircrew licensing arrangements;

(xii) training of aviation personnel;

(xiii) application of, or exemption from, requirements in national legislation;

(xiv) advice on the use and maintenance of specific types of equipment;

(xv) actual or planned availability of new or revised editions of aeronautical charts;

(xvi) carriage of communication equipment;

(xvii) explanatory information relating to noise abatement;

(xviii) selected airworthiness directives;

(xix) changes in NOTAM series or distribution, new editions of AIP or major changes in their contents, coverage or format; and

(xx) other information of a similar nature,

an AIC shall be originated.

NOTE: *The publication of an AIC does not remove the obligation set out in Part B and Part C.*

General specifications

2. (1) An AIC shall be issued in printed form.

(2) Each AIC shall be allocated a consecutive serial number which shall be based on the calendar year.

(3) Where AIC are distributed in more than one series, each series shall be separately identified by a letter.

(4) A checklist of AIC currently in force shall be issued at least once a year, and distributed to the recipients of AIC.

PART F

(Regulation 24)

PRE-FLIGHT AND POST-FLIGHT INFORMATION/DATA

The standards required to be met for pre-flight and post-flight information and data are as follows:

Pre-flight information

1. (1) Aeronautical information provided for pre-flight planning purposes at the aerodrome or heliport referred to in regulation, shall include relevant—

(a) elements of the Integrated Aeronautical Information Package; and

(b) maps and charts.

(2) Additional current information relating to the aerodrome of departure shall be provided concerning the following where applicable:

(a) construction or maintenance work on or immediately adjacent to the manoeuvring area;

(b) rough portions of any part of the manoeuvring area, whether marked or unmarked such as broken parts of the surface of runways and taxiways;

(c) presence and depth of water on runways and taxiways, including their effect on surface friction;

(d) parked aircraft or other objects on or immediately adjacent to taxiways;

(e) presence of other temporary hazards;

(f) presence of birds constituting a potential hazard to aircraft operations;

(g) failure or irregular operation of part or all of the aerodrome lighting system including approach, threshold, runway, taxiway, obstruction and manoeuvring area unserviceability lights and aerodrome power supply;

(h) failure, irregular operation and changes in the operational status of SSR, radio navigation services, VHF aeromobile channels, RVR observing system, and secondary power supply; and

(i) presence and operation of humanitarian relief missions, such as those undertaken under the auspices of the United Nations, together with any associated procedures or limitations applied thereof.

(3) A summary of current NOTAM and other information of urgent character shall be made available to flight crews in the form of plain-language pre-flight information bulletins (PIB).

NOTE: *Guidance on the preparation of PIB is contained in ICAO Doc 8126.*

Automated aeronautical information systems

2. (1) The Authority shall use automated pre-flight information systems to make aeronautical information and data available to operations personnel including flight crew members for self-briefing, flight planning and flight information service purposes.

(2) The information and data made available shall comply with the provisions of Clause 1.

(3) Self-briefing facilities of an automated pre-flight information system shall provide access to operations personnel, including flight crew members and other aeronautical personnel concerned, for consultation as necessary with the aeronautical information service by telephone or other suitable telecommunications means.

(4) The human-to-machine interface of such facilities shall ensure easy access in a guided manner to all relevant information and data.

(5) Automated pre-flight information systems for the supply of aeronautical information and data for self-briefing, flight planning and flight information service shall—

(a) provide for continuous and timely updating of the system database and monitoring of the validity and quality of the aeronautical information data stored;

(b) permit access to the system by operations personnel including flight crew members, aeronautical personnel concerned and other aeronautical users through suitable telecommunications means;

(c) ensure provision, in paper copy form, of the aeronautical information/data accessed, as required;

(d) use access and interrogation procedures based on abbreviated plain language and ICAO location indicators, as appropriate, or based on a menu-driven user interface or other appropriate mechanism as agreed between the civil aviation authority and operator concerned; and

(e) provide for rapid response to a user request for information.

(6) Where automated pre-flight information systems are used to provide the harmonized, common point of access by operations personnel, including flight crew members and other aeronautical personnel concerned, to aeronautical information and data and meteorological information, the Authority shall remain responsible for the quality and timeliness of the aeronautical information and data provided by means of such a system.

Post-flight information

3. (1) The Authority shall ensure that arrangements are made to receive at aerodromes and heliports information concerning—

(a) the state and operation of air navigation facilities or services noted by aircrews and shall ensure that such information is made available to the aeronautical information service for distribution as the circumstances necessitate; and

(b) the presence of birds observed by aircrews and shall ensure that such information is made available to the aeronautical information service for such distribution as the circumstances necessitate.

PART G

(Regulation 25)

TELECOMMUNICATION REQUIREMENTS

The standards required to be met for telecommunications requirements are as follows:

(a) international NOTAM offices shall be connected to the AFS;

(b) the connections provide for printed communications; and

(c) each international NOTAM office shall be connected, through the AFS, to the following points within Trinidad and Tobago for which NOTAM office provides service:

(i) area control centres and flight information centres; and

(ii) aerodromes and heliports at which an information service is established in accordance with Part F.

PART H

(Regulation 26)

ELECTRONIC TERRAIN AND OBSTACLE DATA

The standards required to be met for electronic terrain and obstacle data are as follows:

Coverage areas and requirements for data provision

1. (1) The coverage areas for sets of electronic terrain and obstacle data shall be specified as—

(a) Area 1: the entire territory of a State;

(b) Area 2: within the vicinity of an aerodrome, sub-divided as follows:

(i) Area 2a: a rectangular area around a runway that comprises the runway strip plus any clearway that exists;

(ii) Area 2b: an area extending from the ends of Area 2a in the direction of departure, with a length of 10 km and a splay of 15% to each side;

(iii) Area 2c: an area extending outside Area 2a and Area 2b at a distance of not more than 10 km from the boundary of Area 2a; and

(iv) Area 2d: an area outside the Areas 2a, 2b and 2c up to a distance of 45 km from the aerodrome reference point, or to an existing TMA boundary, whichever is nearest;

(c) Area 3: the area bordering an aerodrome movement area that extends horizontally from the edge of a runway to 90 m from the runway centre line and 50 m from the edge of all other parts of the aerodrome movement area; and

(d) Area 4: The area extending 900 m prior to the runway threshold and 60 m each side of the extended runway centre line in the direction of the approach on a precision approach runway, Category II or III.

(2) Electronic terrain data shall be provided for Area 1. The obstacle data shall be provided for obstacles in Area 1 higher than 100 m above ground.

(3) From 12th November, 2015, at aerodromes regularly used by international civil aviation, electronic obstacle data shall be provided for all obstacles within Area 2 that are assessed as being a hazard to air navigation.

(4) From 12th November, 2015, at aerodromes regularly used by international civil aviation electronic terrain and obstacle data shall be provided for—

(a) Area 2a, for those obstacles that penetrate the relevant obstacle data collection surface specified in Appendix 8;

(b) penetrations of the take-off flight path area obstacle identification surfaces; and

(c) penetrations of the aerodrome obstacle limitation surfaces.

(5) At aerodromes regularly used by international civil aviation, electronic terrain and obstacle data shall be provided for Area 4 for terrain and obstacles that penetrate the relevant obstacle data collection surface specified in Appendix 8, for all runways where precision approach Category II or III operations have been established and where detailed terrain information is required by operators to enable them to assess the effect of terrain on decision height determination by use of radio altimeters.

Terrain data set—content, numerical specification and structure

2. (1) A terrain data set shall contain digital sets of data representing terrain surface in the form of continuous elevation values at all intersections of a defined grid, referenced to common datum.

(2) A terrain grid under subclause (1), shall be angular or linear and of regular or irregular shape.

(3) Sets of electronic terrain data shall include spatial or represented by position and elevation, thematic and temporal aspects for the surface of the Earth containing naturally occurring features such as mountains, hills, ridges, valleys, bodies of water, permanent ice and snow, and excluding obstacles.

NOTE: *In practical terms, depending in the acquisition method used, sets of electronic data when put together would represent a continuous surface that exists at the bare earth, the top of the canopy or something in between, also known as "first reflective surface".*

(4) In terrain data sets, only one feature type such as terrain shall be provided.

(5) The terrain feature attributes listed in Table 3 of the Appendix represent the minimum set of terrain attributes and those annotated as mandatory shall be recorded in the terrain data set.

(6) Electronic terrain data for each area shall conform to the applicable numerical requirements of Table 1 of the Appendix.

Obstacle data set—content, numerical specification and structure

3. (1) Obstacle data shall comprise the digital representation of the vertical and horizontal extent of the obstacle.

(2) Obstacles shall not be included in terrain data sets.

(3) Obstacle data elements are features that shall be represented in the data sets by points, lines or polygons.

(4) In an obstacle data set, all defined obstacle feature types shall be provided and each of them shall be described according to the list of mandatory attributes provided in Table 4 of the Appendix.

(5) Electronic obstacle data for each area shall conform to the applicable numerical requirements in Table 2 of the Appendix.

Terrain and Obstacle data product specifications

4. (1) To allow and support the interchange and use of sets of electronic terrain and obstacle data among different data providers and data users, the ISO 19100 series of standards for geographic information shall be used as a general data modeling framework.

(2) A comprehensive statement of available electronic terrain and obstacle data sets shall be provided in the form of terrain data product specifications as well as obstacle data product specifications on which basis air navigation users will be able to evaluate the products and determine whether the products fulfil the requirements for the intended application.

(3) Each terrain data product specification shall include an overview, a specification scope, data product identification, data content and structure, reference system, data quality, data capture, data maintenance, data portrayal, data product delivery, additional information, and metadata.

(4) An overview of terrain data product specification or obstacle data product specification shall provide an informal description of the product and contain general information about the data product.

NOTE: *Specification of terrain data may not be homogenous across the whole data product but may vary for different parts of the data sets and a specification scope shall be identified.*

(5) Where specification of terrain data is not homogenous across the whole data product, for each subject the specification scope shall be identified.

(6) Identification information concerning both terrain and obstacle data products shall—

(a) include the title of the product;

(b) a brief narrative summary of the content, purpose and spatial resolution if appropriate;

(c) the geographic area covered by the data product; and

(d) supplemental information.

(7) Content information of feature-based terrain data sets or of feature-based obstacle data sets shall each be described in terms of an application schema and a feature catalogue.

(8) Application schema shall provide a formal description of the data structure and content of data sets.

(9) Feature catalogue shall provide the semantics of all feature types and their attributes and attribute value domains, association types between feature types and feature operations, inheritance relations and constraints.

(10) Both terrain and obstacle data product specifications shall identify clearly the coverage and imagery they include and shall provide a narrative description of each of them.

NOTE: *Coverage is considered a subtype of a feature and can be derived from a collection of features that have common attributes.*

(11) Both terrain data product specifications and obstacle data product specifications shall include—

(a) information that identifies the reference system used in the data product;

(b) the spatial reference system and temporal reference system;

(c) the data quality requirements for each data product;

(d) a statement on acceptable conformance quality levels and corresponding data quality measures that cover 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.

(12) Terrain data product specifications shall include a data capture statement that is a general description of the sources and of processes applied for the capture of terrain data.

(13) The principles and criteria applied in the maintenance of terrain data sets and obstacle data sets shall also be provided with the data specifications, including the frequency with which data products are updated.

NOTE: *Of particular importance shall be the maintenance information of obstacle data sets and an indication of the principles, methods and criteria applied for obstacle data maintenance.*

(14) Terrain data product specifications shall contain information on how data held with data sets is presented, such as a graphic output, as a plot or as an image.

(15) The product specifications for both terrain and obstacles data shall also contain data product delivery information which shall include delivery formats and delivery medium information.

(16) The core terrain and obstacle metadata elements shall be included in the data product specifications.

(17) Any additional metadata items required to be supplied shall be stated in each product specification together with the format and encoding of the metadata.

(18) The obstacle data product specification, supported by geographical coordinates for each aerodrome included within the dataset, shall describe the following areas:

(a) Areas 2a, 2b, 2c, 2d of figure 1 of the Appendix;

(b) the take-off flight path area; and

(c) the obstacle limitation surfaces.

APPENDIX
TERRAIN AND OBSTACLE DATA REQUIREMENTS

(Part H of Schedule 2

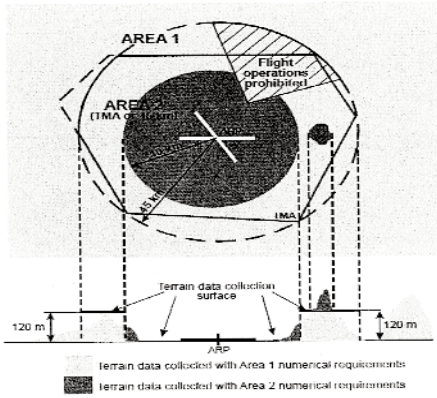


Figure 1. Terrain data collection surfaces–Area 1 and Area 2

1. Within the area covered by a 10 km radius from the ARP, terrain data shall comply 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 comply 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 comply 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 comply with the Area 1 numerical requirements.

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

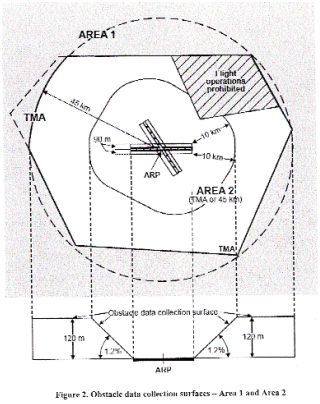


Figure 2. Obstacle data collection surfaces – Area 1 and Area 2

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

(a) Area 2a: a rectangular area around a runway that comprises the runway strip plus any clearway that exists. The Area 2a obstacle collection surface shall have height of 3 m above and for those portions related to a clearway, if one exists, at the elevation of the nearest runway end;

(b) Area 2b: an area extending from the ends of Area 2a in the direction of departure, with a length of 10 km and a splay of 15% to each side. The Area 2b collection surface has a 1.2% slope extending from the ends of Area 2a at the elevation of the runway end in the direction of departure, with a length of 10 km and a splay of 15% to each side;

(c) Area 2c: an area extending outside Area 2a and Area 2b at a distance of not more than 10 km from the boundary of Area 2a. The Area 2c collection surface has a 1.2% slope extending outside Area 2a and Area 2b at a distance of not more than 10 km from the boundary of Area 2a. The initial elevation of Area 2c shall be the elevation of the point of Area 2a at which it commences; and

(d) Area 2d: an area outside the Areas 2a, 2b and 2c up to a distance of 45 km from the aerodrome reference point, or to an existing TMA boundary, whichever is nearest. The Area 2d obstacle collection surface has a height of 100 m above ground.

2. 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.

3. 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.

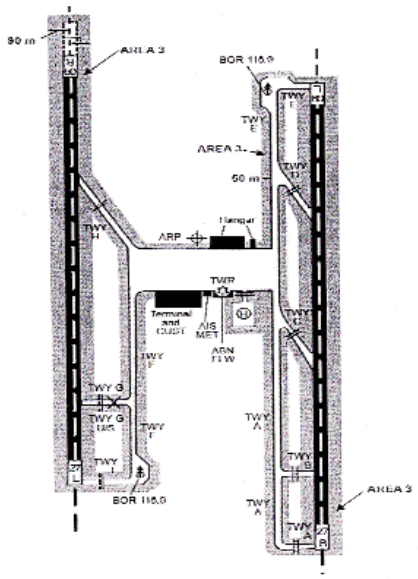


Figure 3. Terrain and obstacle data collection surfaces –Area 3

1. The data collection surface for terrain and obstacles extends a half-metre (0.5 m) above the horizontal plane passing through the nearest point on the aerodrome movement area.

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

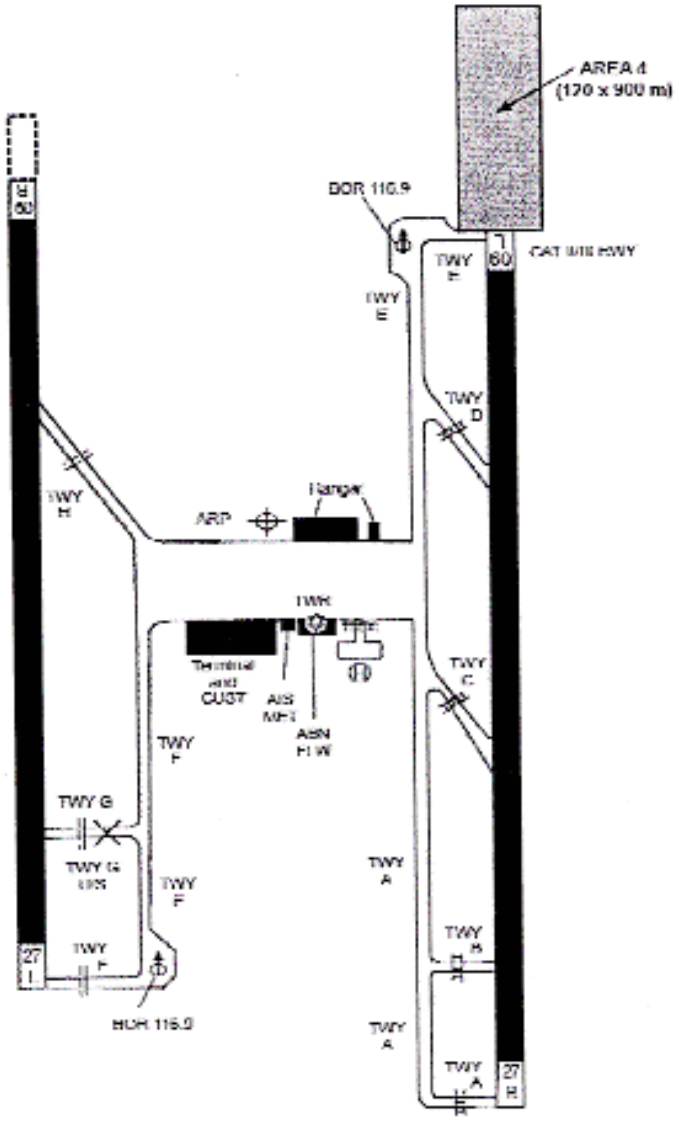


Figure 4. Terrain and obstacle data collection surface – Area 4

Terrain data in Area 4 shall comply with the numerical requirements specified in Table 1.

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	Area 4
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 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	Optional
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
Height	Optional
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

".

7. The Regulations are amended by revoking Schedule 3 and substituting the following Schedule: Schedule 3 revoked and substituted

"SCHEDULE 3

(Regulation 27)

PART A

The following are the standards required to be met in respect of charts:

Operational requirements for charts

1. (1) Each type of chart shall be designed observing Human Factors principles which facilitate its optimum use and contain information relevant to the function of the chart.

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

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

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

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

Titles

2. The title of a chart or chart series prepared in accordance with the specifications contained in this Schedule and intended to satisfy the function of the chart, shall be that of the relevant Part heading as modified by application of any Standard contained in that Part, except that such title shall not include "ICAO" unless the chart conforms with all Standards specified in this Part and any specified for the particular chart.

Miscellaneous information

3. (1) The marginal note layout shall be as given in Appendix 1, except as otherwise specified for a particular chart.

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

(a) designation or title of the chart series;

(b) name and reference of the sheet; and

(c) on each margin an indication of the adjoining sheet, where applicable.

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

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

NOTE: *The title may be abbreviated.*

Symbols

4. (1) Symbols used shall conform to those shown in Appendix 2, except that where it is desired to show on an aeronautical chart special features or items of importance to civil aviation for which no ICAO symbol is at present provided, any appropriate symbol may be chosen for this purpose, provided that it does not cause confusion with any existing ICAO chart symbol or impair the legibility of the chart.

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

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

(4) Effective 18th November, 2010, symbols shall be shown in the manner specified in subclauses (2), (3) and Appendix 2—ICAO Chart Symbols, symbol number 121.

Units of Measurement

5. (1) Distances shall be—

(a) derived as geodesic distances; and

(b) expressed in kilometres, nautical miles or both, provided the units are clearly differentiated.

(2) Altitudes, elevations and heights shall be expressed in feet, provided the units are clearly differentiated.

(3) Linear dimensions on aerodromes and short distances shall be expressed in metres.

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

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

(6) Conversion scales such as kilometres to nautical miles or metres to feet and *vice versa* shall be—

(a) provided on each chart on which distances, elevations or altitudes are shown; and

(b) placed on the face of each chart.

Scale and Projection

6. For charts of—

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

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

Date of validity of aeronautical information

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

Spelling of geographical names

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

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

(3) Where a geographical term such as cape, point, gulf or river, is abbreviated, any particular chart that word shall be spelt out in full in the language used by the publishing agency, in respect of the most important example of each type.

(4) Punctuation marks shall not be used in abbreviations within the body of a chart.

Abbreviations

9. Abbreviations shall be used on aeronautical charts where they are appropriate.

Political boundaries

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

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

Relief

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

(a) orientation and identification;

(b) safe terrain clearance;

(c) clarity of aeronautical information when shown; and

(d) planning.

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

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

Prohibited, restricted and danger areas

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

Air traffic services airspaces

13. Where ATS airspace is shown on a chart, the class of airspace, the type, name or call sign, the vertical limits and the radio frequency to be used shall be indicated and the horizontal limits depicted in accordance with Appendix 2.

Magnetic variation

14. True North and magnetic variation shall be indicated and the order of resolution of magnetic variation shall be as specified for the particular chart.

Aeronautical data

15. (1) The Director General 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 clause 2 of Part A in Schedule 2.

(2) The execution of quality management under subclause (1), shall be made demonstrable for each function stage, where required.

(3) The Director General shall ensure that established procedures exist in order that aeronautical data at any moment is traceable to its origin to allow any data anomalies or errors, detected during the production or maintenance phases or in the operational use, to be corrected.

(4) The Director General shall ensure that the order of chart resolution of aeronautical data shall be that as specified for a particular chart and as presented in a tabular form in Appendix 3.

(5) The Director General shall ensure that integrity of aeronautical data is maintained throughout the data process from survey or origin to the next intended user.

(6) Aeronautical data integrity requirements shall be based upon the potential risk resulting from the corruption of data and upon the use to which the data item is put and, the following classification and data integrity level shall apply:

(a) critical data, integrity level 1×10^{-8}: is a high probability when using corrupted critical data that the continued safe flight and landing of an aircraft would be severely at risk with the potential for catastrophe;

(b) essential data, integrity level 1×10^{-5}: a low probability when using corrupted essential data that the confirmed safe flight and landing of an aircraft would be severely at risk with the potential for catastrophe; and

(c) routine data, integrity level 1×10^{-3}: a very low probability when using corrupted routine data that the continued safe flight and landing of an aircraft would be severely at risk with the potential for catastrophe.

(7) Aeronautical data quality requirements related to the integrity and data classification shall be as provided in Tables 1 to 5 in Appendix 3.

(8) Electronic aeronautical data sets shall be protected by the inclusion in the data sets of a 32-bit cyclic redundancy check implemented by the application dealing with the data sets and shall apply to the protection of all integrity levels of data sets specified in subclause (6).

Common reference systems

16. (1) The Horizontal reference system shall meet the following standards:

(a) World Geodetic System—1984 (WGS-84) shall be used as the horizontal geodetic reference system;

(b) published aeronautical geographical coordinates indicating latitude and longitude shall be expressed in terms of the WGS-84 geodetic reference datum;

(c) geographical coordinates which have been transformed into WGS-84 coordinates but whose accuracy of original field work does not meet the requirements in Part A of Schedule 1, Volumes I and II, shall be identified by an asterisk; and

(d) the order of chart resolution of geographical coordinates shall be that specified for a particular chart series and in accordance with Table 1 of Appendix 3.

(2) The vertical reference system shall meet the following standards:

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

(b) in addition to the elevations referenced to mean sea level, 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; and

(c) the order of chart resolution of elevation and geoid undulation shall be that specified for a particular chart series and in accordance with Table 2 of Appendix 3.

(3) The temporal reference system shall meet the following standards:

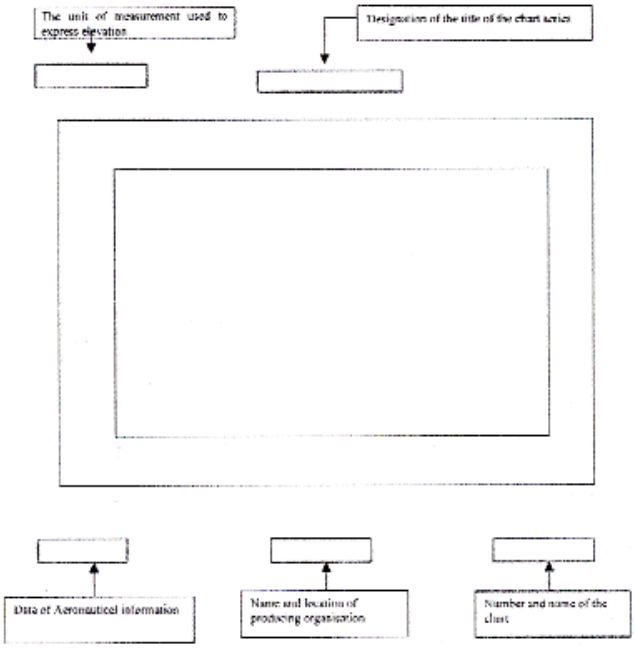
(a) the Gregorian calendar and UTC shall be used as the temporal reference system; and

(b) where a different temporal reference system is used for charting, this shall be indicated in GEN 2.1.2 of the AIP.

APPENDIX 1

[Schedule 3, Part A 3(1)]

MARGINAL NOTE LAYOUT

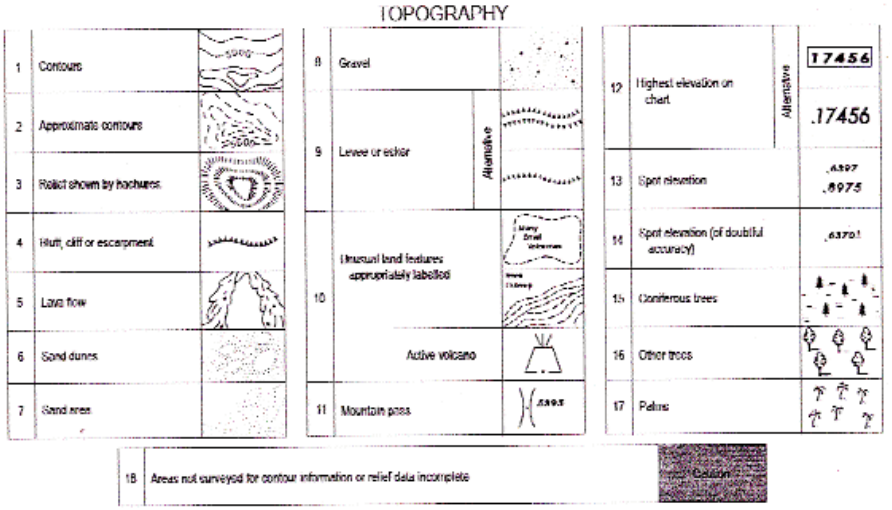


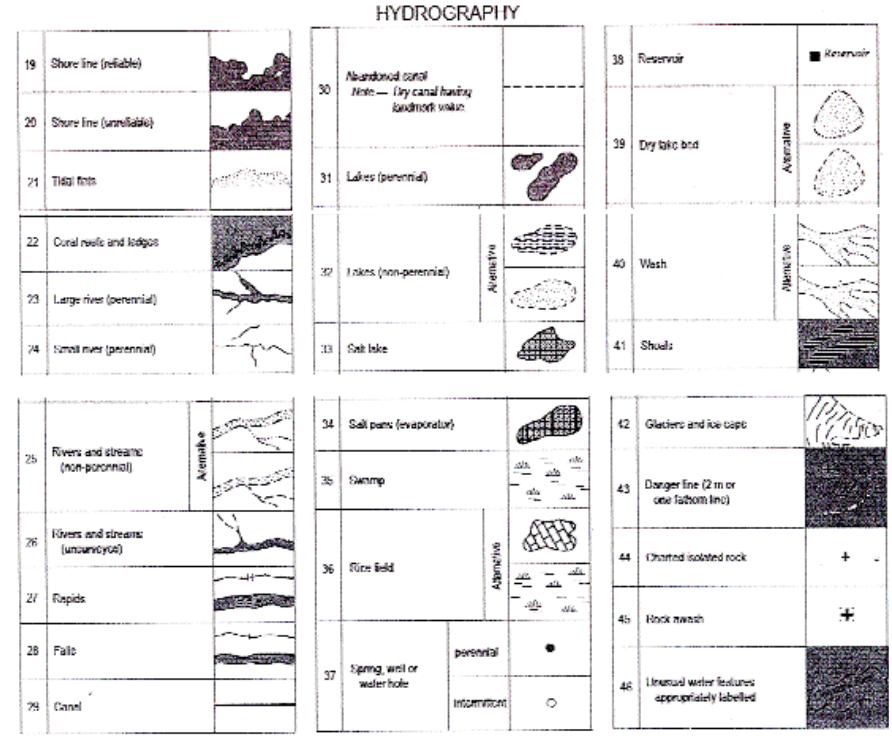
APPENDIX 2

[Schedule 3, Part A, Clauses 1, 4 and 13]

ICAO CHART SYMBOLS

Index	Symbol No.	Index	Symbol No.
Instrument landing system — ILS	108	**SYMBOLS FOR AERODROME/HELIPORT CHARTS (145-161)**	
Non-directional radio beacon — NDB	100	Aerodrome reference point	151
Radio marker beacon	109	Hard surface runway	145
UHF tactical air navigation aid — TACAN	106	Helicopter alighting area on an aerodrome	150
VHF omni-directional radio range — VOR	101	Hot spot	161
VOR radial	105	Intermediate holding position	160
AIR TRAFFIC SERVICES (111-144)			
Advisory airspace — ADA	115		
Advisory route — ADR	118	Landing direction indicator (lighted)	156
Aerodrome traffic zone — ATZ	112	Landing direction indicator (unlighted)	157
Air defence identification zone — ADIZ	117	Obstacle light	146
Altitudes/flight levels	125	Paved steel plank or steel mesh runway	155
ATS/MET reporting point — MRP	123	Point light	154
Change-over point — COP	122	Runway-holding position	159
Control area, Airway, Controlled route	113	Runway visual range (RVR) observation site	153
Control zone — CTR	116	Stop bar	158
Final approach fix — FAF	124	Stopway	148
Flight information region — FIR	111	Taxi ways and parking areas	149
Reporting and Fly by/Flyover functionality	121	Unpaved runway	147
Scale-break (on ATS route)	120	VOR check point	152
Uncontrolled route	114	**SYMBOLS FOR AERODROME OBSTACLE CHARTS — TYPE A, B AND C (162-170)**	
Visual flight path	119	Building or large structure	164
Airspace Classifications (126 and 127)		Clearway	170
Aeronautical data in abbreviated form to be used in association with airspace classification symbols	127	Escarpment	168
Airspace classifications	126	Pole, tower, spire, antenna, etc	163
Airspace Restrictions (128 and 129)		Railroad	165
International boundary closed to passage of aircraft except through air corridor	129	Stopway	169
Restricted airspace (prohibited, restricted or danger area)	128	Terrain penetrating obstacle plane	167
Obstacles (130-136)		Transmission line or overhead cable	166
Elevation of top/Height above specified datum	136	Tree or shrub	162
Exceptionally high obstacle — lighted (optional symbol)	135	***ADDITIONAL SYMBOLS FOR USE ON PAPER AND ELECTRONIC CHARTS (171-180)***	
Exceptionally high obstacle (optional symbol)	134	*Collocated DME fix and marker beacon*	*180*
Group obstacles	132	Collocated radio navigation aid and marker beacon	178
Lighted group obstacles	133	DME fix	179
Lighted obstacle	131	Holding pattern	175
Obstacle	130	Minimum sector altitude	171
Miscellaneous ((137-141)		Missed approach track	174
Isogonic line or isogonal	138	Radio marker beacon	177
Ocean station vessel (normal position)	139	Radio navigation aid	176
Prominent transmission line	137	Runway	173
Wind turbine — unlighted and lighted	140	Terminal arrival altitude	172
Wind turbines — entire group and group in major area, lighted	141		
Visual Aids (142-144)			
Aeronautical ground light	143		
Lightship	144		
Marine light	142		


TOPOGRAPHY
1 Contours
2 Approximate contours
3 Relief shown by hachures
4 Bluff, cliff or escarpment
5 Lava flow
6 Sand dunes
7 Sand area
8 Gravel
9 Levee or esker
Alternative
10 Unusual land features appropriately labelled
Active volcano
11 Mountain pass
12 Highest elevation on chart
17456
.17456
13 Spot elevation
.6397
.8975
14 Spot elevation (of doubtful accuracy)
.6370?
15 Coniferous trees
16 Other trees
17 Palms
18 Areas not surveyed for contour information or relief data incomplete
Caution


HYDROGRAPHY
19 Shore line (reliable)
20 Shore line (unreliable)
21 Tidal flats
22 Coral reefs and ledges
23 Large river (perennial)
24 Small river (perennial)
25 Rivers and streams (non-perennial)
Alternative
26 Rivers and streams (unsurveyed)
27 Rapids
28 Falls
29 Canal
30 Abandoned canal
Note — Dry canal having landmark value
31 Lakes (perennial)
32 Lakes (non-perennial)
Alternative
33 Salt lake
34 Salt pans (evaporator)
35 Swamp
36 Rice field
Alternative
37 Spring, well or water hole
perennial
intermittent
38 Reservoir
Reservoir
39 Dry lake bed
Alternative
40 Wash
Alternative
41 Shoals
42 Glaciers and ice caps
43 Danger line (2 m or one fathom line)
44 Charted isolated rock
45 Rock awash
46 Unusual water features appropriately labelled

BUILT UP AREAS

47	City or large town	
48	Town	
49	Village	
50	Buildings	

RAIL ROADS

51	Railroad (single track)	
52	Railroad (two or more tracks)	
53	Railroad (under construction)	
54	Railroad bridge	
55	Railroad tunnel	
56	Railroad station	

HIGHWAYS AND ROADS

57	Dual highway	
58	Primary road	
59	Secondary road	
60	Trail	
61	Road bridge	
62	Road tunnel	

MISCELLANEOUS

63	Boundaries (international)	
64	Other boundaries	
65	Fence	X—X—X
66	Telegraph or telephone line (when a landmark)	—T— I —
67	Dam	
68	Ferry	

MISCELLANEOUS (Cont.)

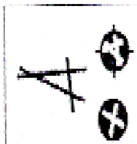
69	Pipeline	Pipeline
70	Oil or gas field	
71	Tank farms	
72	Nuclear power station	
73	Coast guard station	
74	Lookout tower	
75	Mine	
76	Forest ranger station	
77	Race track or stadium	
78	Ruins	
79	Fort	
80	Church	
81	Mosque	
82	Pagoda	
83	Temple	

AERODROMES

84	Civil	Land	
85	Civil	Water	
86	Military	Land	
87	Military	Water	

88	Joint civil and military	Land	
89	Joint civil and military	Water	
90	Emergency aerodrome or aerodrome with no facilities		
91	Abandoned or closed aerodrome		

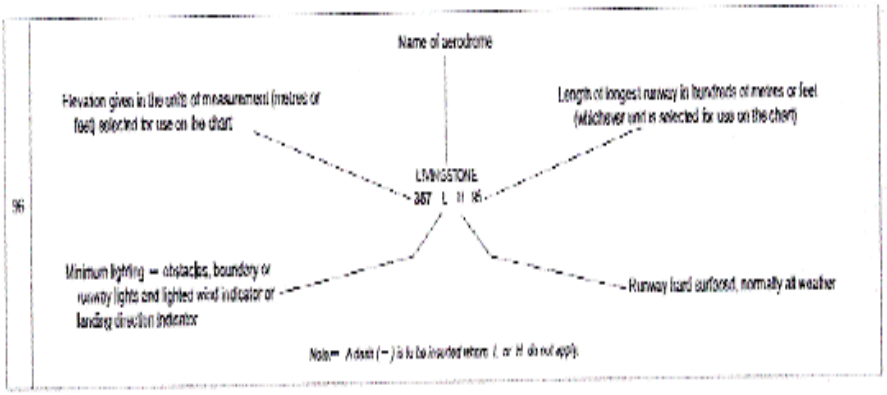
92	Sheltered anchorage	
93	Aerodrome for use on charts on which aerodrome classification is not required e.g. Enroute Charts	
94	Heliport *Note.— Aerodrome for the exclusive use of helicopters*	

95	*Note.— Where required by the function of the chart, the runway pattern of the aerodrome may be shown in lieu of the aerodrome symbol, for example:*	

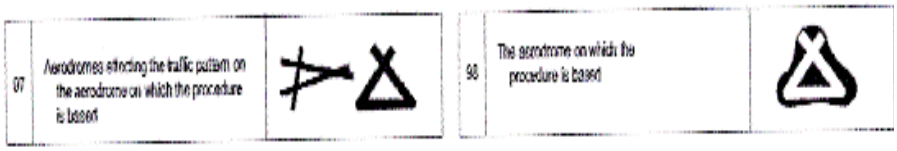
AERODROMES *(Cont.)*

AERODROME DATA IN ABBREVIATED FORM WHICH MAY BE IN ASSOCIATION WITH AERODROME SYMBOLS

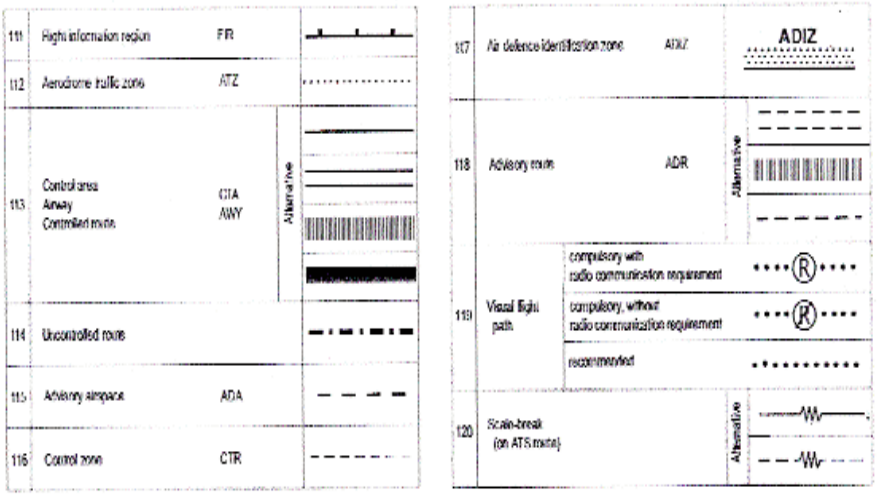
(Reference: 16.9.2.2 and 17.9.2.2)

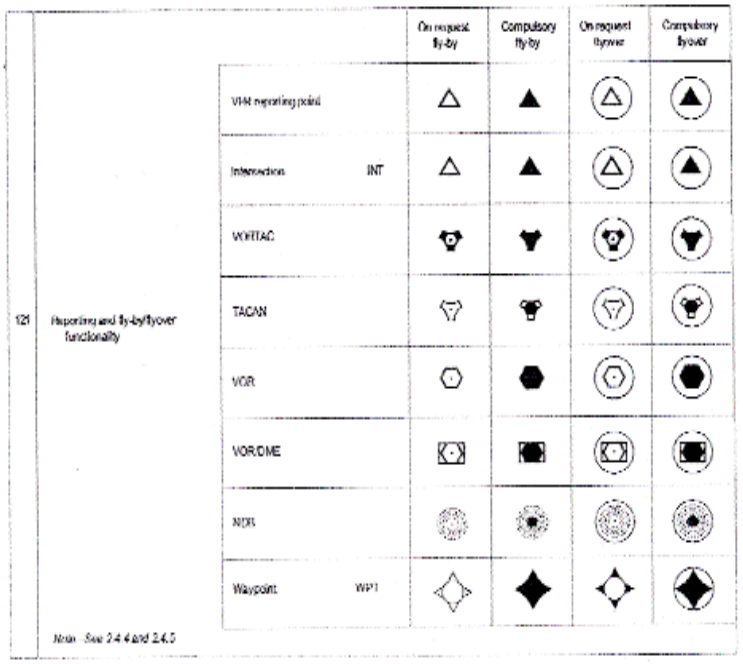


AERODROME SYMBOLS FOR APPROACH CHARTS

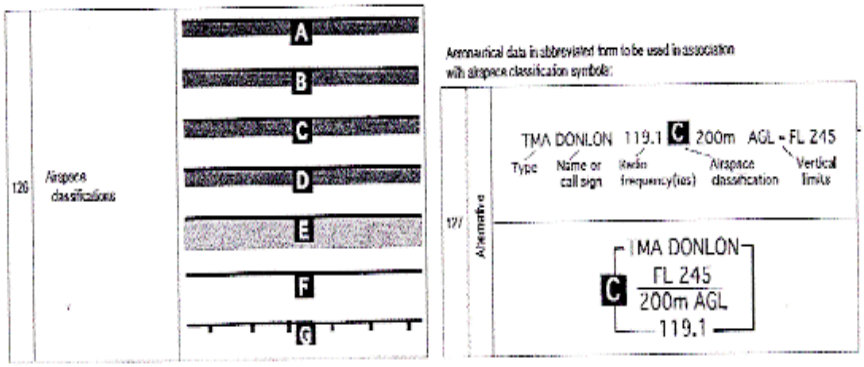


AIR TRAFFIC SERVICES

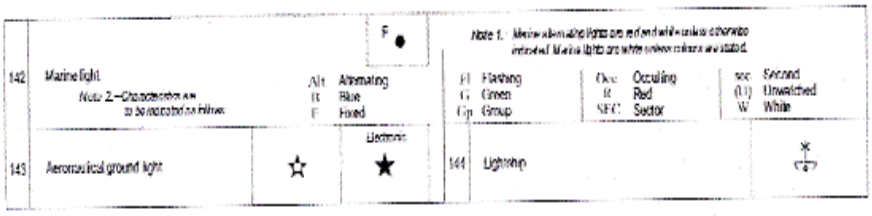




AIRSPACE CLASSIFICATIONS



VISUAL AIDS



SYMBOLS FOR AERODROME/HELIPORT CHARTS

145	Hard surface runway		
146	Pierced steel plank or steel mesh runway		
147	Unpaved runway		
148	Stopway	SWY	
149	Taxiways and parking areas		
150	Helicopter alighting area on an aerodrome		
151	Aerodrome reference point	ARP	
152	VOR check-point		
153	Runway visual range (RVR) observation site		

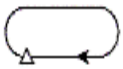
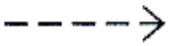
154	Point light		
155	Obstacle light		
156	Landing direction indicator (lighted)		
157	Landing direction indicator (unlighted)		
158	Stop bar		
159	Runway-holding position *Note.— For application, see Annex 14, Volume I, 5.2.10.*	Pattern A Pattern B	
160	Intermediate holding position *Note.— For application, see Annex 14, Volume I, 5.2.11.*		
161	Hot spot *Note.— Hot spot location to be circled.*		

SYMBOLS FOR AERODROME OBSTACLE CHARTS - TYPE A, B AND C

		Plan	Profile
162	Tree or shrub		Identification number
163	Pole, tower, spire, antenna, etc.		
164	Building or large structure		
165	Railroad		
166	Transmission line or overhead cable		

			Plan	Profile
167	Terrain penetrating obstacle plane			
168	Escarpment			
169	Stopway	SWY		
170	Clearway	CWY		

ADDITIONAL SYMBOLS FOR USE ON PAPER AND ELECTRONIC CHARTS

	PLAN VIEW		Electronic
171	Minimum sector altitude *Note. — This symbol may be modified to reflect particular sector shapes.*	MSA	
172	Terminal arrival altitude *Note. — This symbol may be modified to reflect particular TAA shapes.*	TAA	
173	Holding pattern		
174	Missed approach track		

PROFILE

175	Runway	
176	Radio navigation aid (type of aid and its use in the procedure to be annotated on top of the symbol)	
177	Radio marker beacon (type of beacon to be annotated on top of the symbol)	
178	Collocated radio navigation aid and marker beacon (type of aid to be annotated on top of the symbol)	
179	DME fix (distance from DME and the fix use in the procedure to be annotated on top of the symbol)	
180	Collocated DME fix and marker beacon (distance from DME and the type of beacon to be annotated on top of the symbol)	

APPENDIX 3

[Part A, Clause 15 (4) & (7), 16 (1) (2) (c)]

AERONAUTICAL DATA QUALITY REQUIREMENTS

Table 1 - Latitude and Longitude

Latitude and Longitude	Chart Resolution	Integrity / classification
Flight information region boundary points	As plotted	1×10^{-3} routine
P, R, D area boundary points (outside CTA/CTZ boundaries)	As plotted	1×10^{-3} routine
P, R, D area boundary points (inside CTA/CTZ boundaries)	As plotted	1×10^{-5} essential
CTA/CTZ boundary points	As plotted	1×10^{-5} essential
En route navaids, intersections and waypoints, and holding STAR/SID points	1 sec	1×10^{-5} essential
Obstacles in Area 1 (the entire State territory)	As plotted	1×10^{-3} routine
Aerodrome/heliport reference point	1 sec	1×10^{-3} routine
NAVAIDS located at aerodrome/heliport	As plotted	1×10^{-5} essential
Obstacles in Area 3	1/10 sec	1×10^{-5} essential
Obstacle in Area 2	1/10 sec	1×10^{-5} essential
Final approach fixes/points and other essential fixes/points comprising the instrument approach procedure	1/10 sec	1×10^{-5} essential
Runway threshold	1 sec	1×10^{-8} critical
Runway end (flight path alignment point)	1 sec	1×10^{-8} critical
Runway holding point	1 sec	1×10^{-8} critical
Taxiway centre line/parking guidance line points	1/100 sec	1×10^{-3} essential
Taxiway intersection marking line	1 sec	1×10^{-3} essential
Exit guidance line	1 sec	1×10^{-3} essential
Aircraft stand points/INS checkpoints	1/100 sec	1×10^{-1} routine
Geometric centre of TLOF or FATO threshold, heliport	1 sec	1×10^{-8} critical
Apron boundaries (polygon)	1 sec	1×10^{-2} routine
De-icing/anti-icing facility (polygon)	1 sec	1×10^{-2} routine

Note: See Schedule 2, Appendix 8, for graphical illustrations of obstacle data collection surfaces and criteria used to identify obstacles in the defined areas.

Table 2 - Elevation/ Altitude/Height

Elevation/Altitude/Height	Chart Resolution	Integrity / classification
Aerodrome/heliport elevation	1 m or 1 ft	1×10^{-5} essential
WGS-84 geoid undulation at aerodrome/heliport elevation position	1 m or 1 ft	1×10^{-5} essential
Runway or FATO threshold, non-precision approaches	1 m or 1 ft	1×10^{-5} essential
WGS-84 geoid undulation at runway or FATO threshold, TLOF geometric centre, non-precision approaches	1 m or 1 ft	1×10^{-3} essential
Runway or FATO threshold, precision approaches	0.5 m or 1 ft	1×10^{-8} critical
WGS-84 geoid undulation at runway or FATO threshold, TLOF geometric centre, precision approaches	0.5 m or 1 ft	1×10^{-3} critical
Threshold crossing height, precision approaches	0.5 m or 1 ft	1×10^{-8} critical
Obstacle clearance altitude and height	As specified in PANS-OPS (Doc 8168)	1×10^{-5} essential
Obstacles in Area 2	1 m or 1 ft	1×10^{-5} essential
Obstacles in Area 3	1 m or 1 ft	1×10^{-5} essential
Obstacles in Area 1 (the entire State territory)	3 m or 10 ft	1×10^{-3} routine
Distance measuring equipment (DME)	30 m (100 ft)	1×10^{-5} essential
Minimum altitudes	50 m or 100 ft	1×10^{-3} routine

Note: See the Appendix to Schedule 2 for graphical illustration of obstacle data collection surfaces and criteria used to identify obstacles in defined areas

Table 3 - Magnetic Variation

Declination/Variation	Chart Resolution	Integrity / classification
Aerodrome/heliport magnetic variation	1 degree	1×10^{-5} essential

Table 4 - Bearing

Bearing	Chart Resolution	Integrity / classification
Airways segments	1 degree	1×10^{-3} routine
En route and terminal fix information	1/10 degree	1×10^{-3} routine
Terminal arrival/departure route segment	1 degree	1 x 10-3 routine
Instrument approach procedure fix formations	1/10 degree	1×10^{-5} essential

ILS localizer alignment	1 degree	1×10^{-5} essential
MLS zero azimuth alignment	1 degree	1×10^{-5} essential
Runway and FATO bearing	1 degree	1×10^{-3} routine

Table 5 - Length, Distance and Dimension

Length/Distance/Dimension	Chart Resolution	Integrity / classification
Airways segment length	1 km or 1 NM	1×10^{-3} routine
En-route fix formation distance	2/10 km or 1/10 NM	1×10^{-3} routine
Terminal arrival/departure route segment length	1 km or 1 NM	1×10^{-3} essential
Terminal and instrument approach procedure fix formation distance	2/10 km or 1/10 NM	1×10^{-5} essential
Runway and FATO length, TLOF dimensions	1 m	1×10^{-8} critical
Runway width	1 m	1×10^{-5} essential
Displaced threshold distance.	1 m	1×10^{-3} routine
Stopway length and width	1 m	1×10^{-8} critical
Landing distance available	1 m	1×10^{-8} critical
Take-off run available	1 m	1×10^{-8} critical
Take-off distance available	1 m	1×10^{-8} critical
Accelerate-stop distance available	1 m	1×10^{-8} critical
ILS localizer antenna-runway end, distance	As plotted	1×10^{-3} routine
ILS glide slope antenna-threshold, distance along centre line	As plotted	1×10^{-2} routine
ILS marker-threshold distance	2/10 km or 1/10 NM	1×10^{-5} essential
ILS DME antenna-threshold, distance along centre line	As plotted	1×10^{-5} essential
MLS azimuth antenna-runway end, distance	As plotted	1×10^{-3} routine
MLS elevation antenna-threshold, distance along centre line	As plotted	1×10^{-3} routine
MLS DME/P antenna-threshold, distance along centre line	As plotted	1×10^{-5} essential

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

PART B

(Regulation 30)

AERODROME OBSTACLE CHART—ICAO TYPE A, OPERATING LIMITATIONS

The Standards required for Aerodrome Obstacle Chart—ICAO Type A, Operating limitations are as follows:

Units of measurement

1. (1) Elevations shall be shown to the nearest foot.

(2) Linear dimensions shall be shown to the nearest half-metre.

Coverage and scale

2. (1) The extent of each plan view shall be sufficient to cover all obstacles.

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

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

(4) Horizontal and vertical linear scales showing both metres and feet shall be included on an ICAO Type A chart.

Format

3. (1) An ICAO Type A chart shall depict a plan and profile of each runway, any associated stopway or clearway, the take-off flight path area and obstacles.

(2) The profile for each runway, stopway, clearway and the obstacles in the take-off flight path area shall be shown above its corresponding plan.

(3) The profile of an alternative take-off flight path area shall comprise a linear projection of the full take-off flight path and shall be disposed above its corresponding plan in the manner most suited to the ready interpretation of the information.

(4) A profile grid shall be ruled over the entire profile area exclusive of the runway.

(5) The zero for vertical coordinates shall be mean sea level.

(6) The zero for horizontal coordinates shall be the end of the runway furthest from the take-off flight path area concerned.

(7) Graduation marks indicating the subdivisions of intervals shall be shown along the base of the grid and along the vertical margins.

Identification

4. A chart shall be identified by—

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

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

(c) the name of the aerodrome and the designator of the runway.

Magnetic variation

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

Aeronautical data

6. (1) The following are standards for representing obstacles on a chart:

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

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

(c) the shadow of an obstacle is considered to be a plane surface originating at a horizontal line passing through the top of the obstacle at right angles to the centre line of the take-off flight path area;

(d) the plane surface under paragraph *(c)* covers the complete width of the take-off flight path area and extends to the plane surface defined in paragraph *(a)* or to the next higher obstacle if it occurs first;

(e) for the first three hundred metres or one thousand feet of the take-off flight path area, the shadow planes are horizontal and beyond this point, such planes have an upward slope of 1.2 per cent; and

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

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

(a) the take-off flight path area shall commence at the end of the area declared suitable for take-off (i.e., at the end of the runway or clearway as appropriate);

(b) the take-off flight path area shall have its width at the point of origin as 180 m (600 ft) and this width increases at the rate of 0.25D to a maximum of 1,800 m (6,000 ft), where D is the distance from the point of origin; and

(c) the take-off flight path area shall extend to the point beyond which no obstacles exist or to a distance of 10.0 km (5.4 NM), whichever is the lesser.

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

(4) The following information on declared distances for each direction of each runway shall be entered in the space provided:

(a) take-off run available;

(b) accelerate-stop distance available;

(c) take-off distance available; and

(d) landing distance available.

(5) A plan view shall include—

(a) an outline of the runway identified by a solid line, including the length and width, the magnetic bearing to the nearest degree and the runway number;

(b) an outline of the clearways shown by a broken line, including the length and identification as such;

(c) take-off flight path areas shown by a dashed line and the centre line shown by a fine line consisting of short and long dashes;

(d) the exact location of each obstacle together with a symbol indicative of its type;

(e) the elevation and identification of each obstacle;

(f) the limits of penetration of obstacles of large extent in a distinctive manner identified in the legend;

(g) alternative take-off flight path areas; and

(h) indication of the length of each stopway when stopways are shown.

(6) Where alternative take-off flight path areas not centered on the extension of the runway centre line are shown, notes shall be provided explaining the significance of such areas.

(7) A profile view shall include—

(a) a profile of the centre line of the runway identified by a solid line and the profile of the centre line of any associated stopways and clearways identified by a broken line;

(b) an elevation of the runway centre line—

(i) at each end of the runway, at the stopway and at the origin of each take-off flight path area; and

(ii) wherever there is significant change in slope of runway and stopway; and

(c) the following information in respect of obstacles:

(i) each obstacle shown by a solid vertical line extending from a convenient grid line over at least one other grid line to the elevation of the top of the obstacle;

(ii) identification of each obstacle; and

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

Accuracy

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

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

PART C

(Regulation 31)

EN ROUTE CHART—ICAO

The standards required for *En route* Charts-ICAO are as follows:

Coverage and scale

1. *En route* charts shall have adequate overlap to ensure continuity of navigation, and where adjacent charts showing a continuous route structure are used, a large variation of scale between charts shall be avoided.

Projection

2. Parallels and meridians shall be shown at suitable intervals and graduation marks shall be placed at consistent intervals along selected parallels and meridians.

Identification

3. Each sheet of the chart shall be identified by chart series and number.

Culture and topography

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

(2) The area minimum altitude shall be shown on the chart, within each quadrilateral formed by the parallels and meridians.

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

Bearings, tracks and radials

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

Aeronautical data for Aerodromes

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.

Aeronautical data for air traffic system

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

(2) The components under subclause (1) shall include the following:

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

(b) where there is a DME under paragraph *(a)*, the elevation of, in additionally of the transmitting antenna of the DME, to the nearest 100 feet;

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

(d) the designation of the navigation specifications including any limitations, where established;

(e) all air traffic service 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;

(f) name-codes and geographical coordinates in degrees, minutes and seconds of all significant points which define the ATS routes and which are not marked by the position of a radio navigation aid;

(g) for waypoints defining VOR and —

(i) the station identification and radio frequency of the reference VOR d DME navigation routes and DME; and

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

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

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

(j) change-over points on route segments defined by reference to VOR indicating the distances to the nearest kilometre or nautical mile to the navigation aids;

(k) minimum *en route* altitudes and minimum obstacle clearance altitudes on ATS routes to the nearest higher 100 feet as provided in clause 16 of Part A to Schedule 1;

(l) communication facilities listed with their channels and, where applicable, logon address; and

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

Supplementary information to Aeronautical data

9. (1) Details of departure and arrival routes and associated holding patterns in terminal areas shall be shown on an *en route* chart unless the details are shown on an Area Chart, a Standard Departure Chart—Instrument (SID)—ICAO or a Standard Arrival Chart—Instrument (STAR)—ICAO.

(2) Altimeter setting regions shall be shown and identified where established.

PART D

(Regulation 32)

AREA CHART—ICAO

The standards required for Area Charts—ICAO are as follows:

Coverage and scale

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

(2) The chart shall be drawn to scale and show a scale-bar.

Projection

2. Parallels and meridians shall be shown at suitable intervals with graduation marks placed at consistent intervals along the neat lines, as appropriate.

Identification

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

Culture and topography

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

Magnetic variation

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

Bearings, tracks and radials

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

Aeronautical data for aerodrome

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

Aeronautical data for prohibited, restricted and danger areas

8. Prohibited, restricted and danger areas shall be depicted with the associated identification and vertical limits.

Aeronautical data for area minimum altitudes

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

Aeronautical data for Air traffic services system

10. The components of the established relevant ATS shall be shown which shall include the following:

(a) the names, identifications, frequencies and geographical coordinates in degrees, minutes and seconds of all radio navigation aids associated with the ATS system;

(b) where there is a DME, under paragraph *(a)*, the elevation of the transmitting antenna of the DME, to the nearest 100 feet;

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

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

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

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

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

(h) for waypoints defining VOR and DME area navigation routes—

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

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

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

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

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

(l) minimum *en route* altitudes and minimum obstacle clearance altitudes on ATS routes to the nearest higher 100 feet as provided in clause 16 of Part A in Schedule 1;

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

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

(o) communication facilities listed with their channels and, if applicable, log on address; and

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

PART E

(Regulation 33)

STANDARD DEPARTURE CHART—INSTRUMENT (SID)—ICAO

The standards required to be met on Standard Departure Charts—Instrument (SID)—ICAO are as follows:

Coverage and scale

1. (1) The coverage of a chart shall be sufficient to indicate the point where the departure route begins and the specified significant point at which the *en route* phase of flight along a designated ATS route can be commenced.

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

(3) When a chart is not drawn to scale the annotation "NOT TO SCALE" shall be shown and the symbol for scale-break used on tracks and other aspects of the chart which are too large to be drawn to scale.

Projection

2. Graduation marks shall be placed at consistent intervals along the neat lines.

Identification

3. A chart shall be identified by—

(a) the name of the city or town, or area, which the aerodrome serves;

(b) the name of the aerodrome; and

(c) the identification of the standard departure route—instrument as established in accordance with the ICAO Procedures for Air Navigation Services Doc 8168, Volume II, Part II, Chapter 5.

Culture and topography

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

Magnetic variation

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

Bearings, tracks and radials

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

Aeronautical data for aerodrome

7. (1) The aerodrome of departure shall be shown by the runway pattern symbol.

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

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.

Aeronautical data for minimum sector altitude

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

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

(3) Area minimum altitudes under subclause (2), shall also be shown in those parts of the chart not covered by the minimum sector altitude.

Aeronautical data for air traffic services system

10. (1) The components of the established relevant ATS system shall be shown and shall comprise the following:

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

(i) route designator;

(ii) significant points defining the route;

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

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

(v) minimum obstacle clearance altitudes along the route or route segments and altitudes required by the procedure to the nearest higher 100 feet and flight level restrictions where established;

(vi) where the chart is drawn to scale and vectoring on departure is provided, established minimum vectoring altitudes to the nearest higher 100 feet, clearly identified;

(b) the radio navigation aid associated with the route including—

(i) plain language name;

(ii) identification;

(iii) frequency;

(iv) geographical coordinates in degrees, minutes and seconds;

(v) for DME, the channel and the elevation of the transmitting antenna of the DME to the nearest 100 feet;

(c) the name-codes and geographical coordinates in degrees, minutes and seconds of the significant points not marked by the position of a radio navigation aid, the bearing to the nearest one-tenth of a degree and distance to the nearest two-tenths of a kilometre or one-tenth of a nautical mile from the reference radio navigation aid;

(d) applicable holding patterns;

(e) transition altitude or height to the nearest higher 100 feet;

(f) the position and height of close-in obstacles which penetrate the obstacle identification surface and a note included where close-in obstacles penetrating the obstacle identification surface exist but which were not considered for the published procedure design gradient;

(g) area speed restrictions, where established;

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

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

(j) radio communication procedures, including—

(i) call sign of ATS unit;

(ii) frequency;

(iii) transponder setting, where appropriate; and

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

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, Chapter 2, 2.1 on the verso of the chart or as a separate, properly reference sheet.

PART F

(Regulation 34)

STANDARD ARRIVAL CHART—INSTRUMENT (STAR)—ICAO

The standards required to be met for Standard Arrival Chart—Instrument (STAR)—ICAO are as follows:

Coverage and scale

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

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

(3) When a chart is not drawn to scale the annotation "NOT TO SCALE" shall be shown and the symbol for scale-break shall be used on tracks and other aspects of the chart which are too large to be drawn to scale.

Projection

2. Graduation marks shall be placed at consistent intervals along the neat lines.

Identification

3. A chart shall be identified by—

(a) the name of the city or town, or area, which the aerodrome serves;

(b) the name of the aerodrome; and

(c) the identification of the Standard Arrival Route—Instrument as established in accordance with the ICAO Procedures for Air Navigation Services, Doc 8168, Volume II, Part III, Chapter 3.

Culture and topography

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

Magnetic variation

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

Bearings, tracks and radials

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

Aeronautical data for aerodrome

7. (1) The aerodrome of landing shall be shown by the runway pattern symbol.

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

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.

Aeronautical data for minimum sector altitude

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

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

(3) Area minimum altitudes under subclause (2) shall also be shown in those parts of the chart not covered by the minimum sector altitude.

Aeronautical data for air traffic services system

10. The components of the established relevant ATS system shall be shown and shall comprise the following:

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

(i) route designator;

(ii) significant points defining the route;

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

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

(v) minimum obstacle clearance altitudes along the route or route segments and altitudes required by the procedure to the nearest higher 100 feet and flight level restrictions where established; and

(vi) where the chart is drawn to scale and vectoring on arrival is provided, established minimum vectoring altitudes to the nearest higher 100 feet, clearly identified;

(b) the radio navigation aid associated with the route including—

(i) plain language name;

(ii) identification;

(iii) frequency;

(iv) geographical coordinates in degrees, minutes and seconds; and

(v) for DME, the channel and the elevation of the transmitting antenna of the DME to the nearest 100 feet;

(c) the name-codes and geographical coordinates in degrees, minutes and seconds of the significant points not marked by the position of a radio navigation aid, the bearing to the nearest one-tenth of a degree and distance to the nearest two-tenths of a kilometre or one-tenth of a nautical mile from the reference radio navigation aid;

(d) applicable holding patterns;

(e) transition altitude or height to the nearest higher 1,000 feet;

(f) area speed restrictions, where established;

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

(h) all compulsory and "on-request" reporting points;

(i) radio communication procedures, including—

(i) call sign of ATS unit;

(ii) frequency; and

(iii) transponder setting, where appropriate; and

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

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, Chapter 2, 2.2 on the verso of the chart or as a separate, properly reference sheet.

PART G

(Regulation 35)

INSTRUMENT APPROACH CHART—ICAO

The standards required to be met on Instrument Approach Charts—ICAO are as follows:

Coverage and scale

1. (1) The coverage of a chart shall be sufficient to include all segments of the instrument approach procedure and any additional areas as may be necessary for the type of approach intended.

(2) The scale selected for a chart shall provide for optimum legibility and be consistent with—

(a) the procedure shown on the chart; and

(b) sheet size.

(3) An indication of the scale selected under subclause (2) shall be shown on a chart.

(4) Except where this is not practicable, a distance circle with a radius of 20 kilometres or 10 nautical miles 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 and its radius indicated on the circumference.

Projection

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

Identification

3. A chart shall be identified by—

(a) the name of the city or town, or area, which the aerodrome serves;

(b) the name of the aerodrome; and

(c) the identification of the instrument approach procedure as established in accordance with the ICAO Procedures for Air Navigation Services, Doc 8168, Volume II, Part III, Chapter 1.

Culture and topography

4. (1) Culture and topographic information pertinent to the safe execution instrument approach procedure, including missed approach procedure associated holding patterns and visual manoeuvers or circling procedures when established shall be shown.

(2) The topographic information under subclause (1) shall be named, only where necessary to facilitate the understanding of such information.

(3) The minimum topographic information under this clause shall be a delineation of land masses and significant lakes and rivers.

(4) Relief shall be shown in a manner best suited to the particular elevation characteristics of the area.

(5) In areas where relief exceeds 1200 metres or 4,000 feet above the aerodrome elevation within the coverage of the chart or 600 metres or 2,000 feet within eleven metres or 6 nautical miles of the aerodrome reference point or where final approach or missed approach procedure gradient is steeper than optimal due to terrain, all relief exceeding 150 metres or 500 feet above the aerodrome elevation shall be shown by smoothed contour lines with contour values and layer tints printed in brown.

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

Magnetic variation

5. Where the value of magnetic variation is used it shall be displayed to the nearest degree and agree with the magnetic variation used in determining magnetic bearings, tracks and radials.

Bearings, tracks and radials

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

Aeronautical data for aerodromes

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

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

(3) The runway pattern under subclause (1), shall be shown for—

(a) the aerodrome on which the procedure is based; and

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

(4) Aerodrome elevation shall be shown to the nearest foot in a prominent position on the chart.

(5) Threshold elevation or, where applicable, the highest elevation of the touchdown zone shall be shown to the nearest foot.

Aeronautical data for obstacles

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

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

(3) When heights of obstacles above a datum other than mean sea level are shown, the datum shall be the aerodrome elevation except that, at aerodromes having an instrument runway with a threshold elevation more than 7 feet below the aerodrome elevation, the chart datum shall be the threshold elevation of the runway to which the instrument approach is related.

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

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

Aeronautical data for prohibited, restricted and danger areas

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

Aeronautical data for radio communication facilities and navigation aids

10. (1) Radio navigation aids required for instrument approach procedures together with associated frequencies, identifications and track-defining characteristics, if any, shall be shown.

(2) For an instrument approach procedure when more than one station is located on the final approach track, the facility to be used for track guidance for final approach shall be clearly identified, and consideration given to the elimination from the approach chart of those facilities that are not used by the procedure.

(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.

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

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

(6) The distance to the aerodrome from each radio navigation aid concerned with the final approach when required by the instrument approach procedure, shall be shown to the nearest kilometre or nautical mile.

(7) When no track-defining aid indicates the bearing of the aerodrome, the bearing shall also be shown to the nearest degree.

Aeronautical data for minimum sector altitude or terminal arrival altitude

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

Aeronautical data for portrayal of procedure tracks

12. (1) The plan view shall show the following:

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

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

(c) any additional procedure track, other than those specified in paragraphs *(a)* and *(b)*, by an arrowed dotted line;

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

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

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

(g) where specified the holding pattern and minimum holding altitude or height associated with the approach and missed approach;

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

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

(2) A profile shall be provided showing the following:

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

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

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

(d) the profile of any additional procedure segment, other than those specified in paragraphs *(b)* and *(c)*, by an arrowed dotted line;

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

(f) altitudes or height required by the procedure, including transition altitude and procedure altitudes or heights, where established;

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

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

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

NOTE: *The profile is normally located below the plan view.*

Aeronautical data for aerodrome operating minima

13. (1) Aerodrome operating minima where established shall be shown.

(2) The obstacle clearance altitudes or heights for the aircraft categories for which the procedure is designed shall be shown.

(3) For precision approach procedures, additional OCA/H for Cat DL aircraft (wing span between 65 metres and 80 metres or vertical distance between the flight path of the wheels and the glide path antenna between 7 metres and 8 metres shall be published, when necessary.

Aeronautical date for supplementary information

14. (1) The distance to the nearest two-tenths of a kilometre or one-tenth of a nautical mile and a table showing ground speeds and times from the final approach fix to the missed approach point shall be shown where the missed approach point defined by—

(a) a distance from the final approach fix; or

(b) a facility or a fix and the corresponding distance from the final approach fix.

(2) Where DME is required for use in the final approach segment, a table showing altitude or height for every 2 kilometre or 1 nautical mile, as appropriate, shall be shown.

(3) The table under subclause (2), shall not include distances which would correspond to altitude or height below the OCA or OCH.

(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.

(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.

(6) Where ILS or MLS glide path or elevation angle exceeds 3.5 degrees, a note shall be included referring to appropriate aircraft and flight crew qualification requirements for such a procedure.

(7) When a final approach fix is specified at the final approach point for ILS, a clear indication shall be given whether it applies to the ILS procedure, the associated ILS localizer only procedure, or both.

(8) For MLS, a clear indication shall be given where a final approach fix has been specified at the final approach point.

(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, Chapter 5, a cautionary note shall be included.

Aeronautical Database Requirements

15. 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, Chapter 2, 2.2 on the verso of the chart or as a separate, properly reference sheet.

PART H

(Regulation 36)

VISUAL APPROACH CHART—ICAO

The standards required to be met for Visual Approach Charts—ICAO are as follows:

Scale

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

Projection

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

Identification

3. A chart shall be identified by—

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

(b) the name of the aerodrome.

Culture and topography

4. (1) The following shall be shown on a Visual Approach Chart—ICAO:

(a) natural and cultural landmarks such as bluffs, cliffs, sand dunes, cities, towns, roads, railroads and isolated lighthouses;

(b) shore lines, lakes, rivers and streams shall be shown; and

(c) relief depicted in a manner best suited to the particular elevation and obstacle characteristics of the area covered by the chart.

(2) The figures relating to different reference levels shall be clearly differentiated.

Magnetic variation

5. The magnetic variation shall be shown.

Bearings, tracks and radials

6. Bearings, tracks and radials shall be magnetic.

Aeronautical data for aerodromes

7. (1) An aerodrome shall be shown by the runway pattern and abandoned aerodromes shall be identified as abandoned.

(2) Restrictions on the use of any landing direction shall be indicated.

(3) Where the aeronautical data of two or more aerodromes are similar to an extent that would confuse identification one from the other, this shall be indicated.

(4) Aerodrome elevation shall be shown in a prominent position on the chart.

Aeronautical data for obstacles

8. (1) Obstacles shall be shown and identified on a chart.

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

(3) Where the height of an obstacle is shown, the height datum shall be stated in a prominent position on the charts and heights given in parentheses on the chart.

Aeronautical data for prohibited, restricted and danger areas

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

Aeronautical data for designated airspace

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

Aeronautical data for visual approach information

11. (1) Visual approach procedures shall be shown on a chart, where applicable.

(2) Visual aids for navigation shall be shown on a chart, where appropriate.

(3) Location and type of the visual approach slope indicator systems shall be shown with associated—

(a) nominal approach slope angle;

(b) minimum eye height over the threshold of the on-slope signal; and

(c) the angle and direction of displacement, left or right, where the axis of the system is not parallel to the runway centre line.

Aeronautical data for Supplementary information

12. (1) Radio navigation aids together with associated frequencies and identifications shall be shown, where appropriate.

(2) Radio communication facilities with associated frequencies shall be shown, where appropriate.

PART I

(Regulation 37)

AERODROME/HELIPORT CHART—ICAO

The standards required to be met on Aerodrome or Heliport Charts—ICAO are as follows:

Coverage and scale

1. The chart shall use a linear scale which shall in addition to the coverage be sufficiently large to show clearly all the elements listed in clause 4(1).

Identification

2. A chart shall be identified by—

(a) the name of the city or town, or area, which the aerodrome or heliport serves; And

(b) the name of the aerodrome or heliport.

Magnetic variation

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

Data for aerodrome or heliport

4. (1) The following shall be shown on a chart:

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

(b) elevations, to the nearest foot, of the aerodrome or heliport and apron altimeter checkpoint locations where applicable and for non-precision approaches, elevation and geoid undulations of runway threshold and the geometric centre of the touchdown and lift-off area;

(c) elevation and geoid undulation, to the nearest foot—

(i) of the precision approach runway threshold;

(ii) of the geometric centre of the touchdown and lift-off area; and

(iii) at the highest elevation of the touchdown zone of a precision approach runway;

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

(e) all aprons, with aircraft or helicopter stands, lighting, markings and other visual guidance and control aids, where applicable, including location and type of visual docking guidance systems, type of surface

for heliports, and bearing strengths or aircraft type restrictions where the bearing strength is less than that of the associated runways;

(f) geographical coordinates in degrees, minutes and seconds for threshold, geometric centre of touchdown and lift-off area and threshold of the final approach and take-off area where appropriate;

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

(h) geographical coordinates in degrees, minutes, seconds and hundredths of seconds for appropriate taxiway centre line point and aircraft stand;

(i) where established, standard routes for taxiing aircraft with associated designators;

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

(k) position of RVR observation sites;

(l) approach and runway lighting;

(m) location and type of the visual approach slope indicator systems with associated nominal approach slope angle, minimum eye height over the threshold of the on-slope signal, and the angle and direction of the displacement, left or right where the axis of the system is not parallel to the runway centre line;

(n) relevant communication facilities listed with their channels and, where applicable, logon address;

(o) obstacles to taxiing;

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

(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 annotated in tabular form on the face or verso of the chart.

(2) In addition to those items applicable to heliports in subclause (1), a chart shall show—

(a) heliport type;

(b) touchdown and lift-off area including dimensions to the nearest metre, slope, type of surface and bearing strength in tonnes;

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

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

(e) helicopter clearway including length and ground profile;

(f) obstacles including type and elevation of the top of the obstacles to the next higher foot;

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

(h) declared distances to the nearest metre for heliports, where relevant, including—

(i) take-off distance available;

(ii) rejected take-off distance available; and

(iii) landing distance available.

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, sand dunes, isolated lighthouses, 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 un-demarcated 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

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

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

Aeronautical Data

7. (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 and permanent cable car installations and wind turbines, 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 frequencies, coded designators, times of operation and other characteristics unless any or all of this information which is shown is kept up to date by means of new editions of the chart.

(11) Aeronautical ground lights together with their characteristics or 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 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 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 12th November, 2015;

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

(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 inter-change 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 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 Chart—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 continuous 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) horizontal 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 database linked to the Aerodrome Terrain and 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 and 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 runway(s), stopways and clearways, 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 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 electronic 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 whether it fulfills 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 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 include 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 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 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 the chart data product which is implemented as a data set and is described by metadata".*

Made by the Civil Aviation Authority this 8th day of July, 2011.

R. LUTCHMEDIAL
Civil Aviation Authority

Approved by the Minister of Works and Transport this 8th day of July, 2011.

J. WARNER
Minister of Works and Transport