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Part 175 – Aeronautical Information Services & Aeronautical Charts

SECTION ONE – GENERAL REQUIREMENTS

§ 175.1 Applicability

(a) This part of the General Authority of Civil Aviation Regulations (GACAR) prescribes the requirements to be met by Aeronautical Information Service (AIS) and Aeronautical Charts providers that hold or are required to hold an Air Navigation Service Certificate (ANSC) under GACAR Part 170.

(b) Unless specifically authorized by the President, AIS and Aeronautical Charts providers must ensure that the delivery of all services is in accordance with the relevant ICAO Standards and Recommended Practices.

(c) The requirements of this part are to be read in conjunction with:

(1) ICAO Annex 15 – Aeronautical Information Services.

(2) ICAO Annex 4 - Aeronautical Charts

(3) ICAO Doc 10066 – PANS-AIM Aeronautical Information Management.

(4) ICAO Doc 8400 – PANS-ABC Abbreviations and Codes.

Note 1: Guidance material on the organization and operation of the AIS is contained in the ICAO Doc 8126 - Aeronautical Information Services Manual.
Note 2: Guidance material on Aeronautical Information Services Training is contained in the ICAO Doc 9991.
Note 3: Guidance material on the System-wide Information Management (SWIM) Concept is contained in the ICAO Doc 10039.
Note 4: Guidance material on the Quality Management System for Aeronautical Information Services is contained in the ICAO Doc 9839.
Note 5: Guidance material on Aeronautical Charts is contained in ICAO Doc 8697 - Aeronautical Chart Manual.
Note 6: Guidance material on WGS-84 is contained in ICAO Doc 9674 - World Geodetic System — 1984 (WGS-84) Manual.

§ 175.3 Service provider restrictions

(a) No person may provide AIS and Aeronautical Charts for civil aviation in the Kingdom of Saudi Arabia (KSA), including the production of digital data sets and electronic aeronautical charts, unless that person complies with the provisions of this part along with the applicable appendices, and they have been certificated by the President under GACAR Part 170 to provide such service.

(b) Except as provided in GACAR Part 170, each AIS and Aeronautical Charts provider must comply with the limitations and provisions of their certificate, operations specifications and their manual prepared in accordance with § 175.35.

§ 175.5 Demonstration of compliance

The AIS and Aeronautical Charts provider must provide all the relevant evidence to demonstrate compliance with the applicable requirements of this part at the request of the President.

§ 175.7 Facilitation and cooperation

The AIS and Aeronautical Charts provider must facilitate and cooperate as requested when inspections and audits are undertaken by the President.

§ 175.9 Findings and corrective actions

After receipt of notification of findings from the President, the AIS and Aeronautical Charts provider must:

(a) identify the root cause of the non-compliance.

(b) define a corrective action plan that meets the approval of the President.

(c) demonstrate corrective action implementation to the satisfaction of the President within the timeframe proposed by the service provider and agreed with the President.

§ 175.11 Immediate reaction to a safety problem

The AIS and Aeronautical Charts provider must implement any safety measures, including safety directives, mandated by the President.

§ 175.13 Occurrence reporting

(a) An occurrence is an incident associated with the operation of an aircraft which affects or could affect the safety of operation.

(b) The AIS and Aeronautical Charts provider must report to the President, and to any other organization required by the President, any serious occurrence.

(c) Without prejudice to point (a), the AIS and Aeronautical Charts provider must report to the President and to the organization responsible for the design of any system and its constituents, if different from the AIS and Aeronautical Charts provider, any malfunction, technical defect, exceeding of technical limitations, occurrence, or other irregular circumstance that has or may have endangered the safety of services and that has not resulted in a serious incident.

(d) The reports referred to in points (a) and (b) must be made in a form and manner required by the President and contain all the pertinent information about the event known to the AIS and Aeronautical Charts provider.

(e) Reports must be made as soon as possible and in any case within 24 hours of the AIS and Aeronautical Charts provider identifying the details of the event to which the report relates, unless exceptional circumstances prevent this.

(f) Where relevant, the AIS and Aeronautical Charts provider must produce a follow-up report to provide details of actions it intends to take to prevent similar occurrences in the future, as soon as these actions have been identified. This report must be produced in a form and manner established by the President.

§ 175.15 Contingency plans

The AIS and Aeronautical Charts provider must have in place contingency plans for all the services it provides in the case of events which result in significant degradation or interruption of its operations.

§ 175.17 Open and transparent provision of services

(a) The AIS and Aeronautical Charts provider must provide its services in an open and transparent manner. It must publish the conditions of access to its services and changes thereto and establish a consultation process with the users of its services on a regular basis or as needed for specific changes in service provision, either individually or collectively. This must include an annual forum, consultation, or survey with customers in order to determine the quality of the service provided and to ascertain whether or not it meets their requirements. The President must be informed in advance of any such meetings and may attend any as an observer.

(b) Each AIS and Aeronautical Charts provider must address and respond to all customer feedback. Customers will have the right to address feedback to the President on issues when an issue raised remains open or not resolved.

(c) The AIS and Aeronautical Charts provider must not discriminate on grounds of nationality or other characteristic of the user or the class of users of its services.

§ 175.19 Change management procedures

(a) The AIS and Aeronautical Charts provider must use procedures to manage, assess and, if necessary, mitigate the impact of changes to its systems.

(b) The procedures referred to in point (a) or any material modifications to those procedures must:

(1) be submitted, for approval, by the AIS and Aeronautical Charts provider to the President;

(2) not be used until approved by the President.

(c) When the approved procedures referred to in point (b) are not suitable for a particular change, the AIS and Aeronautical Charts provider must:

(1) make a request to the President for an exemption to deviate from the approved procedures.

(2) provide the details of the deviation and the justification with equivalent safety measures for its use to the President in the prescribed format as stipulated in GACAR Part 11.

(3) not use the deviation before being approved to do so by the President.

§ 175.21 Changes to AIS and Aeronautical Charts systems

(a) The AIS and Aeronautical Charts provider planning a change to its systems must:

(1) notify the President of the change.

(2) provide the President, if requested, with any additional information that allows the President to decide whether or not to review the reason for the change.

(3) inform other service providers and, where feasible, users affected by the planned change.

(b) Having notified a change, the AIS and Aeronautical Charts provider must inform the President whenever the information provided in accordance with points (a)(1) and (2) is materially modified, and the relevant service providers and users whenever the information provided in accordance with point (a)(3) is materially modified.

(c) The AIS and Aeronautical Charts provider must only allow the parts of the change, for which the activities required by the procedures referred to in § 175.23 have been completed, to enter into operational service.

(d) If a change is subject to the President's approval, the service provider must only allow the parts of the change which the President has approved to enter into operational service.

(e) When a change affects other service providers and/or users, as identified in point (a)(3), the service provider and these other service providers, in coordination, must determine the dependencies with each other and, where feasible, with the affected users.

§ 175.23 Safety support assessment and assurance of changes to AIS and Aeronautical Charts systems

(a) For any change notified in accordance with § 175.21 (a)(1), the AIS and Aeronautical Charts provider must:

(1) ensure that a safety support assessment in accordance with GACAR Part 5 is carried out covering the scope of the change including:

(i) the equipment, procedural and human elements being changed.

(ii) interfaces and interactions between the elements being changed and the remainder of the system.

(iii) interfaces and interactions between the elements being changed and the context in which it is intended to operate.

(iv) the life cycle of the change from definition to operations including transition into service.

(v) planned degraded modes.

(2) provide documented assurance that the service will operate and will continue to operate only as specified in the specified context.

(b) The AIS and Aeronautical Charts provider must ensure that the safety support assessment referred to in point (a) addresses the following aspects:

(1) verification that:

(i) the assessment corresponds to the scope of the change as defined in point (a)(1).

(ii) the service operates only as specified in the specified context.

(iii) the way the service operates complies with and does not contradict any applicable requirements of this part; and

(2) specification of the monitoring criteria necessary to demonstrate that the service delivered by the changed system will continue to operate only as specified in the specified context.

§ 175.25 Contracted activities

(a) Contracted activities include all the activities within the scope of the AIS and Aeronautical Charts provider's operations, in accordance with the terms of the certificate, that are performed by other organizations either themselves certified to carry out such activity or if not certified, working under the service provider's oversight. The AIS and Aeronautical Charts provider must ensure that when contracting or purchasing any part of its activities to or from external organizations, the contracted or purchased activity, system or constituent conforms to the applicable requirements.

(b) When the AIS and Aeronautical Charts provider contracts any part of its activities to an organization that is not itself certified in accordance with a GACA Regulation to carry out such activity, it must ensure that the contracted organization works under its oversight to ensure conformance to the applicable requirements. The AIS and Aeronautical Charts provider must ensure that the President is given access to the contracted organization to determine continued compliance with the applicable requirements under this Regulation.

§ 175.27 Personnel requirements

(a) The AIS and Aeronautical Charts provider must engage, employ or contract:

(1) An accountable manager, acceptable to the President, identified for the purposes of this part as the Manager of Aeronautical Information Services and Aeronautical Charts, who has the authority within the AIS and Aeronautical Charts provider's organization to ensure that each aeronautical information product and service listed in their manual:

(i) can be resourced to meet operational requirements and;

(ii) is provided in accordance with the requirements prescribed by this part:

(2) A senior person or group of senior persons who are responsible for ensuring that the AIS and Aeronautical Charts provider's organization complies with the requirements of this part. Such a nominated person or persons must be ultimately responsible to the Manager of Aeronautical Information Services and Aeronautical charts.

(3) Sufficient personnel to collect, collate, check, coordinate, edit, draw, produce and publish aeronautical information products for the aeronautical information services listed in their manual.

(b) The senior person or persons designated in (a)(2) must:

(1) Establish a procedure to initially assess the competence of those personnel authorized by the AIS and Aeronautical Charts provider to collect, collate, check, edit, draw, produce and publish aeronautical information products for the aeronautical information services listed in their manual;

(2) Establish a procedure to maintain the competence of those authorized personnel; and

(3) Provide authorized personnel with written evidence of the scope of their authorization.

§ 175.29 Staff operational competence.

The AIS and Aeronautical Charts provider must -

(a) Develop job descriptions with the identification of the knowledge and skills required for each function for all AIS technical staff involved in aeronautical information management, cartographic services, and aeronautical charts production.

(b) Develop training programs for AIS and cartographic technical staff, which cover initial, On-the-Job (OJT), recurrent and advanced/specialized training.

(c) Develop an annual training plan for each AIS and cartographic technical staff member detailing and prioritizing what type of training will be provided. This plan must cover at least the recurrent training and include all AIS and cartographic technical and aeronautical charts production.

(d) Prior to being assigned tasks and responsibilities, each new AIS and cartographic technical staff member must be required to satisfactorily complete initial and OJT in accordance with the training program.

(e) Develop a system for the maintenance of training records for all AIS and cartographic technical staff. The records for competency assessment for all AIS and cartographic technical staff must be maintained in accordance with § 175.33.

§ 175.31 Facilities requirements

The AIS and Aeronautical Charts provider must ensure that there are adequate and appropriate facilities to perform and manage all tasks and activities in accordance with the applicable requirements of this part.

§ 175.33 Record-keeping

(a) The AIS and Aeronautical Charts provider must establish a system of record-keeping that allows adequate storage of the records and reliable traceability of all its activities, covering in particular all the elements indicated in § 175.73.

(b) The format and the retention period of the records referred to in point (a) must be specified in the service provider's management system procedures.

(c) Records must be stored in a manner that ensures protection against damage, alteration and theft.

(d) All records are legible and of a permanent nature; and

(e) All records are retained for at least 5 years except NOTAM, AIP Supplements and Aeronautical Information Circulars, which need only be retained for 30 days after cancellation.

§ 175.35 Operations manuals

(a) The AIS and Aeronautical Charts provider must provide and keep up to date its operations manuals relating to the provision of its services for the use and guidance of operations personnel. The operations manual and any changes thereto must be accepted by the President.

(b) The AIS and Aeronautical Charts provider must ensure that:

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

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

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

(c) Each AIS and Aeronautical Charts provider must prepare and maintain a manual containing:

(1) a statement signed by the Manager of Aeronautical Information Services and Aeronautical Charts on behalf of the AIS and Aeronautical Charts provider confirming that:

(i) the manual and any included documents define the organization and demonstrate its means and methods for ensuring ongoing compliance with this part; and

(ii) the manual and any included documents will be complied with at all times.

(2) the titles and names of the senior person or persons required by GACAR § 175.27;

(3) the duties and responsibilities of the senior persons specified in § 175.27 including matters for which they have responsibility to deal directly with the President on behalf of the organization;

(4) an organization chart showing lines of responsibility of the senior persons specified in § 175.27;

(5) a summary of the applicant’s staffing structure for each aeronautical information product and service listed under paragraph (c)(6) here below;

(6) a list of the aeronautical information products and services to be provided;

(7) details of the applicant’s procedures regarding:

(i) the competence of personnel;

(ii) the control of documentation;

(iii) the collection of information;

(iv) the publication of aeronautical information;

(v) the correction of errors in published information;

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

(vii) quality assurance.

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

(9) the manual must be acceptable to the President

(10) each AIS and Aeronautical Charts provider must—

(i) ensure that its manual is amended, as required, to remain a current description of the AIS and Aeronautical Charts provider's organization, and services;

(ii) ensure that any amendments made to its manual meet the applicable requirements of this part;

(iii) comply with the manual amendment procedure contained in its manual;

(iv) provide the President with a copy of each amendment to its manual, immediately after the amendment is incorporated into the manual; and

(v) make such amendments to its manual as the President may consider necessary in the interests of aviation safety.

§ 175.37 Arrangements with foreign states

The AIS and Aeronautical Charts provider must coordinate with the President when interacting with foreign States or foreign AIS and Aeronautical Charts providers when there are implications for Regional Air Navigation Agreements for which the KSA is a party.

§ 175.39 Data error detection and authentication

The AIS and Aeronautical Charts provider must ensure that the transfer of aeronautical data is subject to a suitable authentication process such that recipients are able to confirm that the data or information has been transmitted by an authorized source.

§ 175.41 Error reporting, measurement, and corrective actions

(a) The AIS and Aeronautical Charts provider must ensure that error reporting, measurement and corrective action mechanisms are established and maintained.

(b) The error reporting, error measurement and corrective mechanisms must ensure that:

(1) problems identified during origination, production, storage, handling and processing, or those reported by users after publication, are recorded;

(2) all problems reported in relation to the aeronautical data and aeronautical information are analyzed by the AIS and Aeronautical Charts provider and the necessary corrective actions are performed;

(3) priority is given to resolution of all errors, inconsistencies and anomalies detected in critical and essential

aeronautical data;

(4) affected users are warned of errors by the most effective means, taking into account the integrity level of the aeronautical data and aeronautical information; and

(5) the President is notified of a promulgated information incident as prescribed in (c) here below.

(c) The AIS and Aeronautical Charts provider must submit a promulgated information incident report to the President within 24 hours of the promulgated information incident. The report must include the following information:

(1) date and time of the incident;

(2) brief description of events;

(3) details to identify the publication, map, chart, or other means by which the information or aeronautical data was promulgated;

(4) details relating to the information or aeronautical data that gave rise to the incident;

(5) name, organization, and contact details of the person notifying the incident.

§ 175.43 Data quality limitations

The AIS and Aeronautical Charts provider must identify, in the aeronautical information products, except NOTAM, the aeronautical data and aeronautical information that do not meet the data quality requirements.

§ 175.45 Publication of information on aerodromes and helicopter landing sites not eligible for certification under GACAR Part 139, Part 138 and Part 137.

The AIS and Aeronautical Charts provider may publish aeronautical data and aeronautical information in the AIP concerning an aerodrome or helicopter landing site not eligible for certification under GACAR Part 139, Part 138 and Part 137 provided the aeronautical data originator responsible for the aerodrome or helicopter landing site information has nominated a responsible person who is responsible for complying with the applicable requirements contained in this part.

§ 175.47 Identification of data quality limitations

The identification of data not meeting the data quality requirements must be made with an annotation or by explicitly providing the quality value.

§ 175.49 Acceptance of aeronautical information and aeronautical data

The following aeronautical information and aeronautical data must be approved by the President before it is published:

(a) airspace changes, including controlled/regulated airspace, CTA/TMA/CTR/ATZ, ATS routes, Prohibited / Danger / Restricted Areas.

(b) activities of a dangerous nature and other potential hazards.

(c) instrument flight procedures.

(d) terrain and obstacles data

(e) meteorological information

(f) search and rescue.

(g) runway characteristics, including thresholds and declared distances.

(h) aerodrome rescue & firefighting categories.

(i) VHF/UHF frequencies.

(j) ground/satellite-based navigation systems.

SECTION TWO - AERONAUTICAL INFORMATION SERVICES (AIS)

SUBPART A – GENERAL SPECIFICATIONS

§ 175.57 Aeronautical Information

(a) The object of AIS is to ensure the flow of aeronautical data and aeronautical information necessary for global air traffic management (ATM) system safety, regularity, economy and efficiency in an environmentally sustainable manner.

(b) The role and importance of aeronautical data and aeronautical information changed significantly with the implementation of Area Navigation (RNAV), Performance-Based Navigation (PBN), airborne computer-based navigation systems, Performance-Based Communication (PBC), Performance-Based Surveillance (PBS), data link systems and satellite voice communications (SATVOICE). Corrupt, erroneous, late or missing aeronautical data and aeronautical information can potentially affect the safety of air navigation.

(c) Guidance material on the organization and operation of aeronautical information services is contained in ICAO Doc 8126 'Aeronautical Information Services Manual'.

§ 175.59 Common reference systems for air navigation

The AIS provider must use the following reference systems:

(a) Horizontal reference system

The World Geodetic System — 1984 (WGS-84) must be used as the horizontal (geodetic) reference system for air navigation. Consequently, published aeronautical geographical coordinates (indicating latitude and longitude) must be expressed in terms of the WGS-84 geodetic reference datum.

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

(b) Vertical reference system

(1) Mean Sea Level (MSL) datum must be used as the vertical reference system for air navigation.

Note 1: The geoid globally most closely approximates MSL. It is defined as the equipotential surface in the gravity field of the Earth which coincides with the undisturbed MSL extended continuously through the continents.

Note 2: Gravity-related heights (elevations) are also referred to as orthometric heights while distances of points above the ellipsoid are referred to as ellipsoidal heights.

(2) The Earth Gravitational Model — 1996 (EGM-96) must be used as the global gravity model for air navigation.

(3) At those geographical positions where the accuracy of EGM-96 does not meet the accuracy requirements for elevation and geoid undulation on the basis of EGM-96 data, regional, national or local geoid models containing high resolution (short wavelength) gravity field data must be developed and used. When 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, must be provided in the Aeronautical Information Publication (AIP).

Note: Specifications concerning determination and reporting (accuracy of field work and data integrity) of elevation and geoid undulation at specific positions at aerodromes/heliports are given in Appendix 1.

(c) Temporal reference system

(1) The Gregorian calendar and Coordinated Universal Time (UTC) must be used as the temporal reference system for air navigation.

Note 1: A value in the time domain is a temporal position measured relative to a temporal reference system.

Note 2: UTC is a time scale maintained by the Bureau International de l'Heure and the IERS and forms the basis of a coordinated dissemination of standard frequencies and time signals.

Note 3: Guidance material relating to UTC is contained in Attachment D of ICAO Annex 5 — Units of Measurement to be Used in Air and Ground Operations.

Note 4: ISO Standard 8601 specifies the use of the Gregorian calendar and 24-hour local or UTC for information interchange while ISO Standard 19108* prescribes the Gregorian calendar and UTC as the primary temporal reference system for use with geographic information.*

(2) When 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, must include either a description of that system or a citation for a document that describes that temporal reference system.

Note: ISO Standard 19108, Annex D describes some aspects of calendars that may have to be considered in such a description.*

§ 175.61 Miscellaneous specifications

(a) Aeronautical information products intended for international distribution must include English text for those parts expressed in plain language.

(b) Place names must be spelt in conformity with local usage, transliterated, when necessary, into the ISO-Basic Latin alphabet.

(c) Units of measurement used in the origination, processing and distribution of aeronautical data and aeronautical information must be in conformity with the units of measure prescribed in GACAR Part 2.

(d) ICAO abbreviations must be used in aeronautical information products whenever they are appropriate, and their use will facilitate distribution of aeronautical data and aeronautical information.

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* ISO Standard

- *8601 — Data elements and interchange formats — Information interchange — Representation of dates and times 9000 — Quality Management Systems — Fundamentals and Vocabulary*
- *19101 — Geographic information — Reference model 19104 — Geographic information — Terminology 19108 — Geographic information — Temporal schema*
- *19109 — Geographic information — Rules for application schema 19110 — Geographic information — Feature cataloguing schema 19115 — Geographic information — Metadata*
- *19117 — Geographic information — Portrayal*
- *19131 — Geographic information — Data product specification*

SUBPART B – RESPONSIBILITIES AND FUNCTIONS

§ 175.63 Responsibilities

(a) The AIS provider must ensure that the requirements of this part are adequately met. It is a condition of any AIS provider certification, that the aeronautical data and aeronautical information provided must be of required quality in accordance with § 175.77.

(b) The AIS provider must ensure that the provision of aeronautical data and aeronautical information covers the entire territory of the Kingdom of Saudi Arabia (KSA) and those areas over the high seas for which Saudi Arabia is responsible for the provision of Air Traffic Services (ATS).

(c) The AIS provider must clearly indicate that aeronautical data and aeronautical information provided for and on behalf of the Kingdom of Saudi Arabia (KSA) are provided under the authority of the President, irrespective of the format in which it is provided.

(d) The AIS provider must ensure that formal arrangements are established between originators of aeronautical data and aeronautical information and the AIS in relation to the timely and complete provision of aeronautical data and aeronautical information.

Note: The scope of aeronautical data and aeronautical information that must be the subject of formal arrangements is specified in Subpart D.

§ 175.65 AIS Provider responsibilities and functions

The following responsibilities apply to the AIS provider:

(a) An AIS provider must ensure that aeronautical data and aeronautical information necessary for the safety, regularity and efficiency of air navigation are made available in a form suitable for the operational requirements of the air traffic management (ATM) community, including:

(1) those involved in flight operations, including flight crews, flight planning and flight simulators; and

(2) ATS providers responsible for flight information service and the services responsible for pre-flight information.

Note: A description of the ATM community is contained in the Global Air Traffic Management Operational Concept (ICAO Doc 9854).

(b) An AIS provider must receive, collate, or assemble, edit, format, publish/store and distribute aeronautical data and aeronautical information concerning the entire territory of the Kingdom of Saudi Arabia (KSA) as well as those areas over the high seas for which Saudi Arabia is responsible for the provision of ATS. Aeronautical data and aeronautical information must be provided as aeronautical information products.

Note: An AIS provider may include origination functions.

(c) Where 24-hour service is not provided, service must be available during the whole period an aircraft is in flight in the area of responsibility of the AIS, plus a period of at least two hours before and after such a period. Service must also be available at such other time as may be requested by an appropriate ground organization.

(d) An AIS provider must, in addition, obtain aeronautical data and aeronautical information to enable it to provide pre-flight information service and to meet the need for in-flight information:

(1) from the AIS of other States; and

(2) from other sources that may be available.

Note: One such source is the subject of a provision in § 175.129.

(e) Aeronautical data and aeronautical information obtained under § 175.65 (d)(1) must, when distributed, be clearly identified as having the authority of the originating State.

(f) Aeronautical data and aeronautical information obtained under § 175.65 (d)(2) must, if possible, be verified before distribution and if not verified must, when distributed, be clearly identified as such.

(g) An AIS provider must make available to the AIS of other States any aeronautical data and aeronautical information required by them.

§ 175.67 Exchange of aeronautical data and aeronautical information

(a) The AIS provider is designated as the office to which all elements of aeronautical information products provided by other States must be addressed. The AIS provider must be qualified to deal with requests for aeronautical data and aeronautical information provided by other States.

(b) The AIS provider must establish formal arrangements between those parties providing aeronautical data and aeronautical information on behalf of the States and their users in relation to the provision of the service.

Note: Guidance material on such formal arrangements is contained in the Aeronautical Information Services Manual (ICAO Doc 8126).

(c) Where more than one international NOTAM office is designated within Saudi Arabia, the extent of responsibility and the territory covered by each office must be defined and approved by the President.

(d) An AIS provider must arrange, as necessary, to satisfy operational requirements for the issuance and receipt of NOTAM distributed by telecommunication.

(e) Wherever practicable, direct contact with other aeronautical information services must be established in order to facilitate the international exchange of aeronautical data and aeronautical information.

(f) Except as provided in (h), one copy of each of the following aeronautical information products (where available) that have been requested by the AIS of a Contracting State must be made available by the AIS provider and provided in the mutually agreed form(s), without charge:

(1) Aeronautical Information Publication (AIP), including Amendments and Supplements;

(2) Aeronautical Information Circulars (AIC);

(3) NOTAM; and

(4) aeronautical charts.

(g) The exchange of more than one copy of the elements of aeronautical information products and other air navigation documents must be subject to bilateral agreement between the AIS provider, when approved by GACA President, and other participating States and entities.

(h) When aeronautical data and aeronautical information are provided in the form of digital data sets to be used by the AIS, they must be provided on the basis of agreement between the AIS provider, when approved by

GACA President, and other States concerned.

Note: The intention is that States are able to access data for the purposes specified in § 175.65 (d).

(i) The procurement of aeronautical data and aeronautical information, including the elements of aeronautical information products, and other air navigation documents, by States other than Contracting States and by other entities must be subject to separate agreement between the AIS and aeronautical charts provider, when approved by GACA President, and other participating States and entities.

(j) Globally interoperable aeronautical data and aeronautical information exchange models must be used by the AIS provider for the provision of data sets.

Note: Guidance material on globally interoperable aeronautical data and aeronautical information exchange models is contained in ICAO Doc 8126.

§ 175.69 Copyright

Note: In order to protect the investment in the products of the AIS provider as well as to ensure better control of their use, an AIS provider may apply copyright to those products in accordance with the national legislation.

(a) The AIS provider must apply copyright if directed to by the President.

(b) Any aeronautical information product which has been granted copyright protection and provided to another State in accordance with § 175.67 must only be made available to a third party on the 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.

(c) When aeronautical data and aeronautical information are provided to a State in accordance with § 175.67 (h), the receiving State must not provide the digital data sets to any third party without the consent of the President.

§ 175.71 Cost recovery

The overhead cost of collecting and compiling aeronautical data and aeronautical information may be included in the cost basis for aerodrome and air navigation services charges, as appropriate, in accordance with the principles contained in ICAO's Policies on Charges for Airports and Air Navigation Services (ICAO Doc 9082).

Note: When costs of collection and compilation of aeronautical data and aeronautical information are recovered through airport and air navigation services charges, the charge to an individual customer for the supply of a particular aeronautical information product may be based on the costs of printing paper copies, production of electronic media and distribution.

SUBPART C – AERONAUTICAL INFORMATION MANAGEMENT

§ 175.73 Information management requirements

(a) The AIS provider must establish information management resources and processes that are adequate to ensure the timely collection, processing, storing, integration, exchange and delivery of quality-assured aeronautical data and aeronautical information within the air traffic management (ATM) system.

(b) The AIS provider must ensure that management of aeronautical data and aeronautical information include the following processes:

(1) collection;

(2) processing;

(3) quality control; and

(4) distribution.

(c) Collection

(1) the identification of data originators must be documented by the AIS provider based on the scope of aeronautical data and aeronautical information to be collected.

(2) a record of data originators must be maintained by the AIS provider.

Note: Metadata requirements in Subpart H specify the information to be recorded for each originator.

(3) each data element to be collected must be mapped to an identified data originator, in accordance with the formal arrangements established between data originators and the AIS provider.

(4) the list of aeronautical information subjects and their properties, as contained in Appendix 1, must be used by the AIS provider to establish formal arrangements between the originators and the AIS.

(5) valid codes for the code lists of the aeronautical data properties and sub-properties, as contained in Appendix 1, must be defined in the formal arrangements between the originators and the AIS provider.

(6) Appendix 1 must be considered as a reference for aeronautical data and aeronautical information origination and publication requirements.

Note 1: Appendix 1 presents the scope of data and information that can be collected and maintained by the AIS provider.

Note 2: Appendix 1 provides a common data description that can be used by data originators and the AIS provider.

(d) Processing

(1) collected data must be verified and validated by the AIS provider for compliance with data quality requirements.

Note 1: Appendix 1 contains aeronautical data attributes and quality requirements (accuracy, resolution and integrity).

Note 2: Guidance material on the aeronautical data quality requirements (accuracy, resolution, integrity

and traceability and protection requirements) may be found in the World Geodetic System — 1984 (WGS-84) Manual (ICAO Doc 9674).

Note 3: Supporting data quality material in respect of data accuracy, publication resolution, and integrity of aeronautical data, together with guidance material in respect to the rounding convention for aeronautical data, is contained in Radio Technical Commission for Aeronautics (RTCA) Document DO-201A/European Organization for Civil Aviation Equipment (EUROCAE) Document ED-77 —Standards for Aeronautical Information (or equivalent).

Note 4: Guidance material on the management of aeronautical data quality is included in the Manual on the Quality Management System for Aeronautical Information Management (ICAO Doc 9839).

Note 5: Verification activities may include:

(i) *comparison processes in which data and information are compared with an independent source;*

(ii) *feedback processes in which data and information are compared between their input and output state;*

(iii) *processing through multiple independent and different systems, comparing the output of each; this includes performing alternative calculations; and*

(iv) *processes in which data and information are compared to the originator's request.*

Note 6: Validation activities may include:

(i) *application processes in which data and information are tested;*

(ii) *processes in which data and information are compared between two different outputs; and*

(iii) *processes in which data and information are compared to an expected range, value or other business rules.*

(2) automation systems implemented by the AIS provider for processing aeronautical data and aeronautical information must ensure traceability of the performed actions.

(e) Quality control

Note: Error-producing faults in the entire process may be mitigated by additional data quality assurance techniques as may be required. These may include application tests for critical data (for example, by flight check); the use of security, logic, semantic, comparison and redundancy checks; digital error detection; and the qualification of human resources and process tools, such as hardware and software.

(1) quality checks must be implemented by the AIS provider to ensure compliance with product specifications contained in Subpart E.

(2) when the same data is duplicated in different aeronautical information products, procedures must be in place by the AIS provider to ensure the consistency of the data.

§ 175.75 Data integrity monitoring and assurance

(a) Data integrity must be assured by the AIS provider by employing cryptographic technologies (e.g. hash functions, message authentication codes, asymmetric and symmetric encryption, and digital certificates).

Note: Guidance material in respect to the processing of aeronautical data and aeronautical information is contained in RTCA DO-200B/EUROCAE ED-76A — Standards for Processing Aeronautical Data.

(b) The technique used by the AIS provider for data error detection must be based on systematic cyclic codes.

Note: The means to implement systematic cyclic codes include the use of hash functions and cyclic redundancy check (CRC).

§ 175.77 Data quality requirements

When originating, processing, or transmitting data, the AIS provider must ensure that aeronautical data conform to the specifications of Appendix 1, referred to as the "aeronautical data catalogue", and meet the following data quality specifications:

(a) Data accuracy: the order of accuracy for aeronautical data must be in accordance with its intended use.

Note: Specifications concerning the order of accuracy (including confidence level) for aeronautical data are contained in Appendix 1.

(b) Data resolution: the order of resolution of aeronautical data must be commensurate with the actual data accuracy.

Note 1: Specifications concerning the resolution of aeronautical data are contained in Appendix 1.

Note 2: The resolution of the data contained in the database may be the same or finer than the publication resolution.

(c) Data integrity:

(1) the integrity of aeronautical data must be maintained throughout the data chain from origination to distribution to the next intended user.

Note: Specifications concerning the integrity classification related to aeronautical data are contained in Appendix 1.

(2) based on the applicable integrity classification, procedures must be put in place in order to:

(i) for routine data: avoid corruption throughout the processing of the data;

(ii) for essential data: ensure corruption does not occur at any stage of the data processing life cycle (e.g. collection, processing, storing, integration, exchange and delivery) and include additional measures or steps as needed to address potential risks in the overall processing of aeronautical data to further ensure data integrity at this level; and

(iii) for critical data: ensure corruption does not occur at any stage of the data processing life cycle (e.g. collection, processing, storing, integration, exchange and delivery) and include additional data integrity assurance processes to mitigate risk of errors.

Note: Guidance concerning measures to ensure data integrity is contained in the Aeronautical Information Service Manual (ICAO Doc 8126), Part II, 4.1 and 6.2.

(d) Data traceability: traceability of aeronautical data must be ensured and retained as long as the data is in use.

(e) Data timeliness: timeliness of aeronautical data must be ensured by including limits on the effective period of the data elements.

Note 1: These limits may be associated with individual data elements or data sets.

Note 2: If the effective period is defined for a data set, it will account for the effective dates of all of the individual data elements.

(f) Data completeness: completeness of aeronautical data must be ensured in order to support its intended use.

(g) Data format: the format of delivered aeronautical data must be adequate to ensure that the data is interpreted in a manner that is consistent with its intended use.

§ 175.79 Aeronautical data and aeronautical information verification and validation

(a) Aeronautical data and aeronautical information to be published as part of an aeronautical information product must be checked before being submitted to the AIS in order to ensure that all necessary information has been included and that it is correct.

(b) The AIS provider must ensure that verification and validation techniques are employed so that the aeronautical data and aeronautical information meet the associated data quality requirements (DQRs).

§ 175.81 Data error detection

(a) The AIS provider must use digital data error detection techniques during the transmission and/or storage of aeronautical data and digital data sets.

(b) The AIS provider must use the digital data error detection techniques in order to maintain the integrity levels as specified in § 175.77 (c).

§ 175.83 Use of automation

(a) Automation must be applied by the AIS provider in order to ensure the quality, efficiency and cost-effectiveness of aeronautical information services.

Note: Guidance material on the development of databases and the establishment of data exchange services is contained in ICAO Doc 8126.

(b) Due consideration to the integrity of data and information must be given by the AIS provider when automated processes are implemented and mitigating steps taken where risks are identified.

Note: Risks of altering the integrity of data and information may be introduced by automated processes in cases of unexpected systems behaviors.

(c) In order to meet the data quality requirements, automation must:

(1) enable digital aeronautical data exchange between the parties involved in the data processing chain; and

(2) use aeronautical information exchange models and data exchange models designed to be globally interoperable.

§ 175.85 Quality management system

(a) The AIS provider must implement and maintain quality management systems encompassing all functions of an AIS, as outlined in § 175.65. The execution of such quality management systems must be made demonstrable to the President for each function stage.

Note: Guidance material is contained in the Manual on the Quality Management System for Aeronautical Information Services (ICAO Doc 9839).

(b) The AIS provider must apply the quality management to the whole aeronautical data chain from data origination to distribution to the next intended user, taking into consideration the intended use of data.

(c) The quality management system established in accordance with (a) must follow the ISO 9000 series of quality assurance standards and be certified by an accredited certification body.

(d) Within the context of the established quality management system, the AIS provider must ensure that:

(1) the competencies and the associated knowledge, skills and attitudes required for each function are identified, and personnel assigned to perform those functions are appropriately trained.

(2) processes are in place to ensure that personnel possess the competencies required to perform specific assigned functions.

(3) appropriate records are maintained so that the qualifications of personnel can be confirmed.

(4) initial and periodic assessments are established that require personnel to demonstrate the required competencies.

(5) periodic assessments of personnel are used as a means to detect and correct shortfalls in knowledge, skills and attitudes.

(e) The AIS provider must ensure that the quality management system includes the necessary policies, processes and procedures, including those for the use of metadata, to ensure and verify that 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 communicated to affected users.

(f) The AIS provider must ensure that the established quality management system provides users with the necessary assurance and confidence that distributed aeronautical data and aeronautical information satisfy the aeronautical data quality requirements.

(g) All necessary measures must be taken by the AIS provider to monitor compliance with the quality management system in place.

(h) Demonstration of compliance of the quality management system applied must be by audit by the AIS provider. If nonconformity is identified, initiating action to correct its cause must be determined and taken without undue delay. All audit observations and remedial actions must be evidenced and properly documented.

§ 175.87 Human factors considerations

The AIS provider must ensure that:

(a) The organization of the AIS as well as the design, contents, processing and distribution of aeronautical data

and aeronautical information must take into consideration human factors principles which facilitate their optimum utilization.

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

Note: This may be accomplished through the design of systems, operating procedures or improvements in the operating environment.

SUBPART D – SCOPE OF AERONAUTICAL DATA AND AERONAUTICAL INFORMATION

Note: The scope of aeronautical data and aeronautical information provides the minimum requirement to support aeronautical information products and services, aeronautical navigation data bases, air navigation applications and air traffic management (ATM) systems.

§ 175.89 Scope of aeronautical data and aeronautical information

(a) The aeronautical data and aeronautical information to be received and managed by the AIS provider must include at least the following sub-domains:

(1) Civil Aviation Law, GACARs and associated provisions;

(2) aerodromes and heliports;

(3) airspace;

(4) Air Traffic Services (ATS) routes;

(5) instrument flight procedures;

(6) radio navigation aids/systems;

(7) obstacles;

(8) terrain; and

(9) geographic information.

Note 1: Detailed specifications concerning the content of each sub-domain are contained in Appendix 1.

Note 2: Aeronautical data and aeronautical information in each sub-domain may be originated by more than one organization or authority.

(b) Determination and reporting of aeronautical data by the AIS provider must be in accordance with the accuracy and integrity classification required to meet the needs of the end-user of aeronautical data.

Note: Specifications concerning the accuracy and integrity classification related to aeronautical data are contained in Appendix 1.

§ 175.91 Metadata

(a) The AIS provider must collect Metadata for aeronautical data processes and exchange points.

(b) The AIS provider must apply Metadata collection throughout the aeronautical information data chain, from origination to distribution to the next intended user.

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SUBPART E – AERONAUTICAL INFORMATION PRODUCTS AND SERVICES

§ 175.93 General

(a) The AIS provider must provide aeronautical information in the form of aeronautical information products and associated services.

Note: Specifications concerning the order of resolution of aeronautical data provided for each aeronautical information product are contained in Appendix 1.

(b) When aeronautical data and aeronautical information are provided in multiple formats, the AIS provider must ensure that processes are implemented to ensure data and information consistency between formats.

(c) The AIS provider must provide aeronautical data in accordance with the resolution requirements contained in Appendix 1.

(d) The AIS provider must ensure that geographical coordinates whose accuracy does not meet the requirements specified in Appendix 1 are identified.

(e) The identification of geographical coordinates whose accuracy does not meet the requirements may be made either with an annotation or by explicitly providing the actual accuracy value.

(1) in aeronautical information products that are distributed on paper, the identification must be done with an asterisk following the coordinate value concerned.

§ 175.95 Aeronautical information in a standardized presentation

(a) Aeronautical information provided by the AIS provider in a standardized presentation must include the aeronautical information publication (AIP), AIP Amendments, AIP Supplements, AIC, NOTAM and aeronautical charts.

(b) The AIP, AIP Amendment, AIP Supplement and AIC must be provided as an electronic document (eAIP) and/or on paper.

(c) The AIP, AIP Amendment, AIP Supplement and AIC when provided as an electronic document (eAIP) must allow for both displaying on electronic devices and printing on paper.

§ 175.97 Aeronautical Information Publication (AIP)

Note 1: The AIP is intended primarily to satisfy international requirements for the exchange of aeronautical information of a lasting character essential to air navigation.

Note 2: The AIP constitutes the basic information source for permanent information and long duration temporary changes.

(a) The AIS provider must issue the KSA AIP.

(b) The KSA AIP is published on behalf of the President.

(c) The KSA AIP must include:

(1) a statement of the competent authority responsible for the air navigation facilities, services or procedures

covered by the AIP;

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

(3) a list of significant differences between the national regulations and practices of the Kingdom of Saudi Arabia (KSA) and the related ICAO Standards, Recommended Practices and Procedures, given in a form that would enable a user to differentiate readily between the requirements of the KSA and the related ICAO provisions;

(4) the choice made in each significant case where an alternative course of action is provided for ICAO Standards, Recommended Practices and Procedures.

(d) The AIP must contain concise, current information relating to, and arranged under, the subject headings listed in Appendix 2. This facilitates both the locating of information under a specific heading and the storage/retrieval of the information using automated processing.

(e) If no facilities or services are provided or no information is available for publication in respect of one of the categories of information specified in Appendix 2, an indication must be given as to which of these circumstances applies (e.g. “NIL” or “Not AVBL”).

(f) When the AIP Data Set (as specified in § 175.113) is provided, and when authorized by the President, the following sections of the AIP may be omitted and a reference to the data set availability must be provided:

(1) GEN 2.5 List of radio navigation aids;
(2) ENR 2.1 FIR, UIR, TMA and CTA;
(3) ENR 3.1 Conventional navigation routes;
(4) ENR 3.2 Area navigation routes;
(5) ENR 3.5 Other routes;
(6) ENR 3.6 En-route holding;
(7) ENR 4.1 Radio navigation aids — en-route;
(8) ENR 4.2 Special navigation systems;
(9) ENR 4.4 Name-code designators for significant points
(10) ENR 4.5 Aeronautical ground lights – en-route;
(11) ENR 5.1 Prohibited, restricted and danger areas;
(12) ENR 5.2 Military exercise and training areas and Air Defence Identification Zone (ADIZ);
(13) ENR 5.3.1 Other activities of a dangerous nature;
(14) ENR 5.3.2 Other potential hazards;
(15) ENR 5.5 Aerial sporting and recreational activities;
(16) OE**AD 2.17 Air traffic services airspace;
(17) OE** AD 2.19 Radio navigation and landing aids;
(18) OE** AD 3.16 Air traffic services airspace; and
(19) OE** AD 3.18 Radio navigation and landing aids

(g) When the Obstacle Data Set (as specified in § 175.119) is provided, and when authorized by the President, the following sections of the AIP may be omitted and a reference to the data set availability must be provided:

(1) ENR 5.4 Air navigation obstacles;
(2) OE**AD 2.10 Aerodrome obstacles; and
(3) OE**AD 3.10 Heliport obstacles.

*Note: OE** is to be replaced by the relevant ICAO location indicator*

(h) The “Kingdom of Saudi Arabia (KSA)”, “General Authority of Civil Aviation (GACA)” and AIS provider

must be clearly indicated in the KSA AIP.

(i) The AIP must be self-contained and must include a table of contents.

(j) The AIP must be organized in three parts (GEN, ENR and AD), sections and subsections.

(k) The AIP must be dated.

(l) The date, consisting of the day, month (by name) and year, must be the publication date or the effective date (AIRAC) of the information.

(m) Charts, maps or diagrams must be used to complement or as a substitute for the tabulations or text of AIP.

(n) Note: Where appropriate, charts produced in conformity with section 3 of this part may be used to fulfil this requirement.

(o) When listing locations, the city or town must be given in capital letters followed, where the facility is an aerodrome/heliport or is located at an aerodrome/heliport, by an oblique stroke and the name of the aerodrome/heliport in smaller capital letters or lower case type. Unless otherwise indicated, the list must be in alphabetical order.

(p) The spelling of place names must conform with local usage, transliterated where necessary into the ISO basic Latin alphabet.

(q) In the indication of the geographical coordinates of a location:

(1) the latitude must be given first;

(2) symbols for degrees, minutes or seconds must be omitted;

(3) two digits must always be used in expressing values of less than 10 degrees of latitude;

(4) three digits must always be used in expressing values of less than 100 degrees of longitude; and

(5) the letters N, S, E, W must be used to indicate the cardinal points of the compass to the latitude and longitude as appropriate.

(r) When describing periods of activity, availability or operation, the applicable days and times must be specified.

(s) The units of measurement selected for use in the AIP, e.g. dimensions on aerodromes, distances, elevations or altitudes, must be consistently followed and must adhere to GACAR Part 2.

(t) Index maps and diagrams included in the AIP must comply with the following specifications:

(1) Base map: the base map must be an outline map of the area adapted from existing material with general details. Graticules, topography and other details must be as simple as possible. Political subdivisions must be shown and identified.

(2) Sheet size and scale: a uniform scale must be used for all charts produced as a series and other charts where practicable.

(3) Title and marginal notes: the title must be shown on the top border and must be as short and simple as possible.

(4) Colours: the number of colours used must be kept to a minimum. If more than one colour is used, the colours must offer adequate contrast.

(5) Symbols: symbols must conform, where practicable, to section 3 of this part. The basic, general purpose symbols for AIP index maps are a filled circle ● and an empty circle ◯. Except when the symbols used are self-explanatory, a legend must be provided. For details for which no ICAO symbol has been provided, any appropriate symbol may be chosen provided it does not conflict with an ICAO symbol.

§ 175.99 Electronic AIP (eAIP)

Note: Guidance material for the production and provision of the eAIP is contained in ICAO Doc 8126.

(a) The information content of the eAIP and the structure of chapters, sections and sub-sections must follow the content and structure of the paper AIP. The eAIP must include files that allow for printing a paper AIP.

(b) New or revised information must be identified either by an annotation against it in the margin or by a mechanism that allows comparing the new/revised information with the previous information.

(c) The eAIP must be available online on the Internet.

Note: Guidance material on the use of the Internet is contained in Guidelines on the Use of the Public Internet for Aeronautical Applications (ICAO Doc 9855).

§ 175.101 Specifications for AIP amendments

(a) Operationally significant changes to the AIP must be published in accordance with Aeronautical Information Regulation and Control (AIRAC) procedures and must be clearly identified by the acronym AIRAC.

(b) Regular interval or publication dates for AIP Amendments, must be included in the AIP, Part 1 — General (GEN).

(c) New or revised information contained in the AIP must be identified.

(d) Each AIP Amendment must be allocated a serial number, which must be consecutive and based on the calendar year.

(e) Each AIP Amendment must contain a publication date.

(f) Each AIRAC AIP Amendment must contain an effective date.

(g) When an effective time other than 0000 UTC is used, the effective time must also be indicated.

(h) When an AIP Amendment is issued, it must include references to the serial number of the AIP Supplement or the series and number of the NOTAM which has been incorporated into the amendment.

(i) A brief indication of the subjects affected by the amendment must be given on the AIP Amendment cover sheet.

(j) Each amendment must include a checklist giving the current date of each page in the AIP and must provide a recapitulation of any outstanding manuscript corrections. The checklist must carry both the page number and date.

§ 175.103 Specifications for AIP Supplement

(a) A checklist of valid AIP Supplements must be regularly provided.

(b) Each AIP Supplement must be allocated a serial number which must be consecutive and based on the calendar year.

Note: Guidance material on the use of AIP Supplements together with examples of such use is contained in ICAO Doc 8126.

(c) Each AIP Supplement must be provided on distinctive pages allowing for easy identification from the regular AIP content.

(d) Whenever an AIP Supplement is issued as a replacement of a NOTAM, a reference to the series and number of the NOTAM must be included.

(e) A checklist of valid AIP Supplements must be issued at intervals of not more than one month as part of the checklist of NOTAM required by § 175.109 (r) and with distribution as for the AIP Supplements.

(f) Each AIP Supplement page must show a publication date.

(g) Each AIRAC AIP Supplement page must show a publication date and an effective date.

§ 175.105 Aeronautical Information Circulars (AIC)

(a) The AIS provider must issue as an AIC the following:

(1) a long-term forecast of any major change in legislation, regulations, procedures or facilities; or

(2) information of a purely explanatory or advisory nature liable to affect flight safety; or

(3) information or notification of an explanatory or advisory nature concerning technical, legislative or purely administrative matters.

(b) An AIC must not be used for information that qualifies for inclusion in AIP and NOTAM.

(c) The AIS provider must review at least once a year the validity of AIC currently in force.

(d) A checklist of currently valid AIC must be regularly provided.

(e) An AIC must be provided whenever it is desirable to promulgate:

(1) forecasts of important changes in the air navigation procedures, services and facilities provided;
(2) forecasts of implementation of new navigation systems;
(3) significant information arising from aircraft accident/incident investigation which has a bearing on flight safety;
(4) information on regulations relating to the safeguarding of international civil aviation against acts of unlawful interference;
(5) advice on medical matters of special interest to pilots;
(6) warnings to pilots concerning the avoidance of physical hazards;
(7) effect of certain weather phenomena on aircraft operations;
(8) information on new hazards affecting aircraft handling techniques;
(9) regulations relating to the carriage of restricted articles by air;
(10) reference to the requirements of, and publication of changes in, national legislation;

(11) flight crew licensing arrangements;
(12) training of aviation personnel;
(13) application of, or exemption from, requirements in national legislation;
(14) advice on the use and maintenance of specific types of equipment;
(15) actual or planned availability of new or revised editions of aeronautical charts;
(16) carriage of communication equipment;
(17) explanatory information relating to noise abatement;
(18) airworthiness directives;
(19) changes in NOTAM series or distribution, new editions of AIP or major changes in their contents, coverage or format;
(20) advance information on the snow plan (see (f));
(21) other information of a similar nature.

(f) The snow plan issued under AD 1.2.2 of the AIP must be supplemented by seasonal information, to be issued well in advance of the beginning of each winter (not less than one month before the normal onset of winter conditions) and must contain information such as that listed below:

(1) a list of aerodromes/heliports where snow, slush, ice or frost clearance is expected to be performed during the coming winter:

(i) * in accordance with the runway and taxiway systems; or
(ii) * planned snow clearing, deviating from the runway system (length, width and number of runways, affected taxiways and aprons or portions thereof);

(2) * information concerning any centre designated to coordinate information on the current state of progress of clearance and on the current state of runways, taxiways and aprons;

(3) a division of the aerodromes/heliports into SNOWTAM distribution lists in order to avoid excessive NOTAM distribution;

(4) * an indication, as necessary, of minor changes to the standing snow plan;

(5) * a descriptive list of clearance equipment;

(6) * a list of what will be considered as the minimum critical snowbank to be reported at each aerodrome/heliport at which reporting will commence.

Note: (*) means that this information, or any part of it, may be included in the AIP.

(g) The AIC must be given international distribution.

(h) The AIS provider must give AIC selected for international distribution the same distribution as for the AIP.

(i) Each AIC must be allocated a serial number which must be consecutive and based on the calendar year.

(j) In the event that AIC are provided in more than one series, each series must be separately identified by a letter (e.g. A 2/02, B 4/02).

(k) A checklist of AIC currently in force must be issued at least once a year, with distribution as for the AIC.

(l) A checklist of AIC provided internationally must be included in the NOTAM checklist.

(m) Each AIC must be accepted by the President before publication.

§ 175.107 Aeronautical charts

Note: Section 3 of this part provides regulations including provision requirements for each chart type.

(a) The AIS provider must ensure that the aeronautical charts listed alphabetically below, when available for designated international aerodromes/heliports, form part of the AIP, or be provided separately to recipients of the AIP:

(1) Aerodrome/Heliport Chart — ICAO;
(2) Aerodrome Ground Movement Chart — ICAO;
(3) Aerodrome Obstacle Chart — ICAO Type A;
(4) Aerodrome Obstacle Chart — ICAO Type B (when available);
(5) Aerodrome Terrain and Obstacle Chart — ICAO (Electronic);
(6) Aircraft Parking/Docking Chart — ICAO;
(7) Area Chart — ICAO;
(8) ATC Surveillance Minimum Altitude Chart — ICAO;
(9) Instrument Approach Chart — ICAO;
(10) Precision Approach Terrain Chart — ICAO;
(11) Standard Arrival Chart — Instrument (STAR) — ICAO;
(12) Standard Departure Chart — Instrument (SID) — ICAO; and
(13) Visual Approach Chart — ICAO.

(b) The AIS provider must ensure that the "En-route Chart — ICAO" form part of the AIP or be provided separately to recipients of the AIP.

(c) The AIS provider must ensure that the aeronautical charts listed alphabetically below, when available, be provided as aeronautical information products:

(1) World Aeronautical Chart — ICAO 1:1 000 000;
(2) Aeronautical Chart — ICAO 1:500 000;
(3) Aeronautical Navigation Chart — ICAO Small Scale; and
(4) Plotting Chart — ICAO chart.

(d) Electronic aeronautical charts must be provided based on digital databases and the use of geographic information systems.

(e) The chart resolution of aeronautical data must be that as specified for a particular chart.

Note: Specifications concerning the chart resolution for aeronautical data are contained in Appendix 1.

§ 175.109 NOTAM

(a) A checklist of valid NOTAM must be regularly provided.

(b) Except as otherwise provided in (e) and (f), each NOTAM must contain the information in the order shown in the NOTAM Format in Appendix 3.

Note: Detailed guidance material covering NOTAM, SNOWTAM, ASHTAM and Pre-Flight Information Bulletin (PIB) production is contained in ICAO Doc 8126.

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

Note 1: The ICAO NOTAM Code together with significations/uniform abbreviated phraseology, and ICAO abbreviations, are contained in the Procedures for Air Navigation Services — ICAO Abbreviations and Codes (PANS-ABC, ICAO Doc 8400).

Note 2: Additional procedures covering the reporting of runway surface conditions are contained in the Procedures for Air Navigation Services — Aerodromes (PANS-Aerodromes, ICAO Doc 9981).

(d) All NOTAM must be issued in the English language.

(e) Information concerning snow, slush, ice, frost, standing water, or water associated with snow, slush, ice or frost on the movement area must be disseminated by means of a SNOWTAM, and must contain the information in the order shown in the SNOWTAM Format in Appendix 4.

Note: The origin and order of the information is a result of assessment processes and procedures prescribed in the PANS-Aerodromes (ICAO Doc 9981).

(f) Information concerning an operationally significant change in volcanic activity, volcanic eruption and/or volcanic ash cloud must, when reported by means of an ASHTAM, contain the information in the order shown in the ASHTAM Format in Appendix 5.

(g) When errors occur in a NOTAM, a NOTAM with a new number to replace the erroneous NOTAM must be issued or the erroneous NOTAM must be cancelled, and a new NOTAM issued.

(h) When a NOTAM is issued which cancels or replaces a previous NOTAM:

(1) the series and number of the previous NOTAM must be indicated.

(2) the series, location indicator and subject of both NOTAM must be the same.

(i) Only one NOTAM must be cancelled or replaced by a NOTAM.

(j) Each NOTAM must deal with only one subject and one condition of the subject.

Note: Guidance material concerning the combination of a subject and a condition of the subject in accordance with the NOTAM Selection Criteria is contained in ICAO Doc 8126.

(k) Each NOTAM must be as brief as possible and so compiled that its meaning is clear without the need to refer to another document.

(l) Each NOTAM must be transmitted as a single telecommunication message.

(m) NOTAM containing permanent information or temporary information of long duration must carry appropriate AIP or AIP Supplement references.

(n) Location indicators included in the text of a NOTAM must be those contained in Location Indicators (ICAO Doc 7910). A curtailed form of such indicators must not be used.

(o) Where no ICAO location indicator is assigned to the location, its place name must be entered in plain language, spelt in conformity with local usage, transliterated, when necessary, into the ISO basic Latin alphabet.

(p) NOTAM number and series allocation:

(1) a series identified by a letter and a four-digit number followed by a stroke and a two-digit number for the

year must be allocated to each NOTAM. The four-digit number must be consecutive and based on the calendar year.

(2) letters S and T must not be used to identify a NOTAM series.

(3) all NOTAM must be divided in series based on subject, traffic or location or a combination thereof, depending on end-user needs. NOTAM for aerodromes allowing international air traffic must be issued in international NOTAM series.

(4) if NOTAM are issued in both English and a national language, the NOTAM series must be organized such that the national language series is equivalent to the English language series in terms of content.

(5) the content and geographical coverage of each NOTAM series must be stated in detail in the AIP, section GEN 3.

(6) series allocation must be monitored and, if required, appropriate measures must be taken to assure that no series reach the maximum possible number of issued NOTAM before the end of the calendar year.

(q) NOTAM checklist:

(1) a checklist of valid NOTAM must be issued as a NOTAM checklist at intervals of not more than one month.

Note: Omitting a NOTAM from the checklist does not cancel a NOTAM.

(2) one NOTAM checklist must be issued for each series.

(3) a NOTAM checklist must refer to the latest AIP Amendments, AIP Supplements, data sets and the internationally distributed AIC, and, when it is selected, include the checklist of AIP Supplements.

(4) a NOTAM checklist must have the same distribution as the actual message series to which it refers and must be clearly identified as a checklist.

§ 175.111 Digital data sets

Note: A data subject may appear in multiple data sets.

(a) If available, the AIS provider must ensure that digital data is in the form of the following data sets:

(1) AIP data set;

(2) terrain data sets;

(3) obstacle data sets;

(4) aerodrome mapping data sets; and

(5) instrument flight procedure data sets.

(b) When available, the AIS provider must ensure that each data set is provided to the next intended user together with at least the minimum set of metadata that ensures traceability.

(c) A checklist of valid data sets must be regularly provided.

(d) To facilitate and support the use of exchange of digital data sets between data providers and data users, the ISO 19100 series of standards for geographic information must be used as a reference framework.

Note: Guidance material concerning the use of the ISO 19100 series of standards is contained in ICAO Doc 8126.

(e) A description of available digital data sets must be provided in the form of data product specifications on which basis air navigation users will be able to evaluate the products and determine whether they fulfil the requirements for their intended use (application).

Note: ISO Standard 19131 outlines the specifications for geographic data products. This may include an overview, 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.

(f) The content and structure of digital data sets must be defined in terms of an application schema and a feature catalogue.

Note: ISO Standard 19109 contains rules for application schema while ISO Standard 19110 describes the feature cataloguing methodology for geographic information.

(g) The aeronautical information model used must encompass the aeronautical data and aeronautical information to be exchanged.

(h) The aeronautical information model used must:

(1) use Unified Modelling Language (UML) to describe the aeronautical information features and their properties, associations and data types;

(2) include data value constraints and data verification rules;

(3) include provisions for metadata as specified in § 175.145; and

(4) include a temporality model to enable capturing the evolution of the properties of an aeronautical information feature during its life cycle.

(i) The aeronautical data exchange model used must:

(1) apply a commonly used data encoding format;

(2) cover all the classes, attributes, data types and associations of the aeronautical information model detailed in (f); and

(3) provide an extension mechanism by which groups of users can extend the properties of existing features and add new features which do not adversely affect global standardization.

Note 1: The intent of using a commonly used data encoding format is to ensure interoperability of aeronautical data exchange between agencies and organizations involved in the data processing chain.

Note 2: Examples of commonly used data encoding formats include Extensible Markup Language (XML), Geography Markup Language (GML) and JavaScript Object Notation (JSON).

(j) Charts, maps or diagrams must be used to complement digital data sets.

§ 175.113 AIP data set

Note: The purpose of the AIP data set is to support the transition of the ATM domain towards the use of digital data sets instead of paper products. Therefore, its scope is defined considering the likelihood that the data contained in this set is being used in digital format by service providers, ATC and Instrument Flight Rules/Visual Flight Rules (IFR/VFR) airspace users.

(a) An AIP data set must be provided covering the extent of information as provided in the AIP.

(b) When it is not possible to provide a complete AIP data set, the data subset(s) that are available must be provided.

(c) The AIS provider must ensure that the AIP data set, if available, contains the digital representation of aeronautical information of lasting character, including permanent information and long-duration temporary changes.

(d) The AIP data set must include data about the following subjects, with the properties indicated in brackets being included as a minimum (if applicable):

(1) Air Traffic Services (ATS) airspace (type, name, lateral limits, vertical limits, class of airspace);

(2) special activity airspace (type, name, lateral limits, vertical limits, restriction, activation);

(3) ATS route and other route (Identifier prefix, designator, flight rules);

(4) route segment (navigation specification, from point, to point, track, length, upper limit, lower limit, Minimum En-Route Altitude (MEA), Minimum Obstacle Clearance Altitude (MOCA), direction of cruising level, required navigation performance);

(5) waypoint – en-route (Reporting requirement, identification, location, formation);

(6) aerodrome/heliport (ICAO location indicator, name, International Air Transport Association (IATA) designator, served city, certified ICAO, certification date, certification expiration date, control type, field elevation, reference temperature, magnetic variation, airport reference point);

(7) runway (designator, nominal length, nominal width, surface type, strength);

(8) runway direction (designator, true bearing, threshold, Take Off Run Available (TORA), Take-Off Distance Available (TODA), Accelerate-Stop Distance Available (ASDA), Landing Distance Available (LDA), rejected TODA (for helicopters));

(9) Final Approach and Take-Off (FATO) (designation, length, width, threshold point);

(10) Touchdown and Lift-Off (TLOF) (designator, centre point, length, width, surface type);

(11) radio navigation aid (type, identification, name, aerodrome/heliport served, hours of operation, magnetic variation, frequency/channel, position, elevation, magnetic bearing, true bearing, zero bearing direction);

Note 1: The description of the data subjects, together with their properties, data type and applicable data quality requirements, is provided in Appendix 1.

Note 2: The AIP data set includes relevant AIP Amendments and AIP Supplements.

(e) When a property is not defined for a particular occurrence of the subjects listed in (d), the AIP data subset must include an explicit "not applicable" indication.

§ 175.115 Terrain and obstacle data sets

Note 1: Numerical requirements for terrain and obstacle data sets are contained in Appendices 1 and 8.
Note 2: Requirements for terrain and obstacle data collection surfaces are contained in Appendix 8.
Note 3: Terrain and obstacle data is intended to be used in the following air navigation applications:

(1) *ground proximity warning system with forward looking terrain avoidance function and Minimum Safe Altitude Warning (MSAW) system;*

(2) *determination of contingency procedures for use in the event of an emergency during a missed approach or take-off;*

(3) *aircraft operating limitations analysis;*

(4) *instrument procedure design (including circling procedure);*

(5) *determination of en-route "drift-down" procedure and en-route emergency landing location;*

(6) *advanced surface movement guidance and control system (A-SMGCS); and*

(7) *aeronautical chart production and on-board databases.*

The data may also be used in other applications, such as training/flight simulator and synthetic vision systems and may assist in determining the height restriction or removal of obstacles that pose a hazard to air navigation.

(a) The AIS provider must ensure that the coverage areas for terrain and obstacle data sets are specified as:

(1) Area 1: the entire territory of the Kingdom of Saudi Arabia (KSA);

(2) Area 2: within the vicinity of an aerodrome, subdivided as follows:

(i) Area 2a: a rectangular area around a runway that comprises the runway strip plus any clearway that exists;

Note: See GACAR Part 139, for dimensions for runway strips.

(ii) Area 2b: an area extending from the ends of Area 2a in the direction of departure, with a length of 10 km (5.4 NM) and a splay of 15 per cent to each side;

(iii) Area 2c: an area extending outside Area 2a and Area 2b at a distance of not more than 10 km (5.4 NM) from the boundary of Area 2a; and

(iv) Area 2d: an area outside Areas 2a, 2b and 2c up to a distance of 45 km (24.3 NM) from the aerodrome reference point, or to an existing Terminal Control Area (TMA) boundary, whichever is nearest;

(3) 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

(4) 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.

(b) Where the terrain at a distance greater than 900 m (3000 ft) from the runway threshold is mountainous or otherwise significant, the length of Area 4 must be extended to a distance not exceeding 2000 m (6500 ft) from the runway threshold.

(c) Surveyors and providers of electronic terrain and obstacle data for Areas 1, 2, 3 and 4 must be accepted by the President.

§ 175.117 Terrain data sets

(a) The AIS provider must ensure that terrain data sets contain the digital representation of the terrain surface in the form of continuous elevation values at all intersections (points) of a defined grid, referenced to common datum.

(b) The AIS provider must ensure that terrain data is provided:

(1) for Area 1.

(2) for aerodromes regularly used by international civil aviation to cover:

(i) Area 2a;
(ii) the take-off flight path area; and
(iii) an area bounded by the lateral extent of the aerodrome obstacle limitation surfaces.

(c) The AIS provider must ensure that additional terrain data within Area 2 is provided for aerodromes regularly used by international civil aviation as follows:

(1) in the area extending to a 10 km radius from the ARP; and

(2) within the area between 10 km and the TMA boundary or a 45 km radius (whichever is smaller), where terrain penetrates a horizontal terrain data collection surface specified as 120 m above the lowest runway elevation.

(d) Arrangements must be made by the AIS provider for coordinating the provision of terrain data for adjacent aerodromes where their respective coverage areas overlap to assure that the data for the same terrain is correct.

(e) When authorized by the President, for those aerodromes located near territorial boundaries, arrangements must be made by the AIS provider and States concerned to share terrain data.

(f) For aerodromes regularly used by international civil aviation, the AIS provider must ensure that terrain data is provided for Area 3.

(g) For aerodromes regularly used by international civil aviation, the AIS provider must ensure that terrain data is provided for Area 4 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.

(h) The AIS provider must ensure that where additional terrain data is collected to meet other aeronautical requirements, the terrain data sets are expanded to include this additional data.

(i) When terrain data sets are provided:

(1) a terrain grid must be angular or linear and must be of regular or irregular shape.

(2) sets of terrain data must include spatial (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, and permanent ice and snow, and exclude obstacles.

(3) in terrain data sets, only one feature type, i.e. terrain, must be provided. Feature attributes describing terrain must be those listed in Appendix 6, Table A6-1. The terrain feature attributes listed in Appendix 6, Table A6-1 represent the minimum set of terrain attributes, and those annotated as mandatory must be recorded in the terrain data set.

(4) terrain data for each area must conform to the applicable numerical requirements in Appendix 1.

§ 175.119 Obstacle data sets

(a) The AIS provider must ensure that obstacle data sets contain the digital representation of the vertical and horizontal extent of obstacles.

(b) The AIS provider must ensure that obstacle data is not included in terrain data sets.

(c) The AIS provider must ensure that obstacle data is provided for obstacles in Area 1 whose height is 100 m or higher above ground.

(d) For aerodromes regularly used by international civil aviation, the AIS provider must ensure that obstacle data is provided for all obstacles within Area 2 that are assessed as being a hazard to air navigation.

(e) For aerodromes regularly used by international civil aviation, the AIS provider must ensure that obstacle data is provided for:

(1) Area 2a for those obstacles that penetrate an obstacle data collection surface outlined by a rectangular area around a runway that comprises the runway strip plus any clearway that exists. The Area 2a obstacle collection surface must have a height of 3 m above the nearest runway elevation measured along the runway centre line, and for those portions related to a clearway, if one exists, at the elevation of the nearest runway end;

(2) 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;

(3) penetrations of the aerodrome obstacle limitation surfaces.

Note: Take-off flight path areas are specified in section 3 of this part. Aerodrome obstacle limitation surfaces are specified in GACAR Part 139.

(f) For aerodromes regularly used by international civil aviation, the AIS provider must ensure that obstacle data is provided for Areas 2b, 2c and 2d for obstacles that penetrate the relevant obstacle data collection surface specified as follows:

(1) 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 per cent to each side. The Area 2b obstacle collection surface has a 1.2 per cent 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 per cent to each side;

(2) 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 obstacle collection surface has a 1.2 per cent 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 has the elevation of the point of Area 2a at which it commences; and

(3) Area 2d: an area outside 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;

except that data need not be collected for obstacles less than a height of 3 m above ground in Area 2b and less than a height of 15 m above ground in Area 2c.

(g) Arrangements must be made by the AIS provider for coordinating the provision of obstacle data for adjacent aerodromes where their respective coverage areas overlap to assure that the data for the same obstacle is correct.

(h) When authorized by the President, for those aerodromes located near territorial boundaries, arrangements must be made by the AIS provider among States concerned to share obstacle data.

(i) For aerodromes regularly used by international civil aviation, the AIS provider must ensure that obstacle data is provided for Area 3 for obstacles that penetrate the relevant obstacle data collection surface extending a half-metre (0.5 m) above the horizontal plane passing through the nearest point on the aerodrome movement area.

(j) For aerodromes regularly used by international civil aviation, the AIS provider must ensure that obstacle data is provided for Area 4 for all runways where precision approach Category II or III operations have been established.

(k) The AIS provider must ensure that where additional obstacle data is collected to meet other aeronautical requirements, the obstacle data sets are expanded to include this additional data.

(l) When obstacle data sets are provided in accordance with this part:

(1) obstacle data elements are features that must be represented in the data sets by points, lines or polygons.

(2) in an obstacle data set, all defined obstacle feature types must be provided and each of them must be described according to the list of mandatory attributes provided in Appendix 6, Table A6-2.

Note: By definition, obstacles can be fixed (permanent or temporary) or mobile. Specific attributes associated with mobile (feature operations) and temporary types of obstacles are annotated in Appendix 6, Table A6-2 as optional attributes. If these types of obstacles are to be provided in the data set, appropriate attributes describing such obstacles are also required.

(3) obstacle data for each area must conform to the applicable numerical requirements contained in Appendix 1.

(4) the obstacle data product specification, supported by geographical coordinates for each aerodrome included within the data set, must describe the following areas:

(i) Areas 2a, 2b, 2c, 2d;
(ii) the take-off flight path area; and
(iii) the obstacle limitation surfaces.

§ 175.121 Aerodrome mapping data sets

The AIS provider must ensure that Aerodrome mapping data sets, if available, are provided in accordance with the following:

(a) Aerodrome mapping data sets must contain the digital representation of aerodrome features.

Note: Aerodrome features consist of attributes and geometries, which are characterized as points, lines or polygons. Examples include runway thresholds, taxiway guidance lines and parking stand areas.

(b) Aerodrome mapping data sets must be made available for aerodromes regularly used by international civil aviation.

(c) Aerodrome mapping data — requirements for provision: Aerodrome mapping data must be supported by electronic terrain and obstacle data for Area 3 in order to ensure consistency and quality of all geographical data related to the aerodrome.

Note: Accuracy and integrity requirements for aerodrome mapping data are contained in Appendix 1.

§ 175.123 Instrument flight procedure data sets

The AIS provider must ensure that instrument flight procedure data sets, if available, are provided in accordance with the following:

(a) Instrument flight procedure data sets must contain the digital representation of instrument flight procedures.

(b) Instrument flight procedure data sets must be made available for aerodromes regularly used by international civil aviation.

(c) The instrument flight procedure data set must include data about the following data subjects, with the properties indicated in brackets being included as a minimum (if applicable):

(1) procedure (all properties);

(2) procedure segment (all properties);

(3) final approach segment (all properties);

(4) procedure fix (all properties);

(5) procedure holding (all properties); and

(6) helicopter procedure (all properties).

Note: The description of the data subjects, together with their properties, data type and applicable data quality requirements, is provided in Appendix 1.

(d) The instrument flight procedure data set must also cover the data publication requirements contained in the Procedures for Air Navigation Services — Aircraft Operations (PANS-OPS, ICAO Doc 8168), Volume II — Construction of Visual and the Instruments Flight Procedures

§ 175.125 Distribution services

(a) General

The AIS provider must:

(1) distribute aeronautical information products those users who request them.

(2) make available the AIP, AIP Amendments, AIP Supplements and AIC by the most expeditious means.

(3) employ global communication networks such as the Internet for the provision of aeronautical information products.

Note: Further guidance on digital data set distribution can be found in the Manual on System-wide Information Management (SWIM) Concept (Doc 10039).

(4) a checklist of the available data sets, including their effective and publication dates, must be made available to allow the users to ensure that current data is being used.

(5) the checklist of the data sets must be made available through the same distribution mechanism as is used for the data sets.

(b) NOTAM distribution

The AIS provider must:

(1) distribute NOTAM on the basis of a request.

(2) prepare NOTAM in conformity with the relevant provisions of the ICAO communication procedures.

(3) ensure that NOTAM are distributed through the Aeronautical Fixed Service (AFS), whenever practicable.

(4) when a NOTAM 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 be, preceding the text. The AIS provider must select the NOTAM that are to be given international distribution.

(5) ensure that international exchange of NOTAM takes place only as mutually agreed between the international NOTAM offices and multinational NOTAM processing units concerned.

(6) ensure that distribution of NOTAM series other than those distributed internationally is granted upon request.

(7) use selective distribution lists when practicable. used

Note: Guidance material relating to selective distribution lists is contained in the Aeronautical Information Services Manual (ICAO Doc 8126).

(8) arrange, as necessary, the issuance and receipt of NOTAM distributed by telecommunication to satisfy operational requirements.

Note: Arrangements may be made for direct exchange of SNOWTAM (see Appendix 4) between aerodromes/heliports.

(9) ensure that the international exchange of ASHTAM and NOTAM where States continue to use NOTAM for distribution of information on volcanic activity, include volcanic ash advisory centres and must take

account of the requirements of long-range operations.

(10) Ensure that the exchange of NOTAM between international NOTAM offices and between the international NOTAM offices and multinational NOTAM processing units must, as far as practicable, cover the needs of operations personnel including flight crew members.

(11) a predetermined distribution system for NOTAM transmitted on the AFS in accordance with § 175.137 (c) must be used whenever possible, subject to the requirements of (10).

(12) the AIS provider must, upon request, grant distribution of NOTAM series other than those distributed internationally.

(c) Data set information services

(1) when provided, the digital data sets specified in § 175.125 must be made available through information services.

Note 1: In the context of system-wide information management, the notion of information service addresses machine-to-machine interaction in a service-oriented architecture.
Note 2: Procedures on information services are contained in the Procedures for Air Navigation Services - Information Management (ICAO PANS-IM, Doc 10199).
Note 3: Guidance material on information services can be found in the Manual on System-wide Information Management Implementation (ICAO Doc 10203).

(i) a data set information service must provide, as a minimum, the ability to query and retrieve as a whole each of the digital data sets specified in § 175.125.

(ii) a data set information service must provide the ability to query and retrieve selected elements of the digital data sets specified in § 175.125.

Note: Guidance material on how to query digital data sets is contained in the Aeronautical Information Services Manual (ICAO Doc 8126), Part IV.

(iii) a data set information service must provide the option to subscribe to notifications on data set updates.

§ 175.127 Pre-flight information service

(a) The AIS provider must ensure that:

(1) for any aerodrome/heliport used for international air operations, aeronautical information relative to the route stages originating at the aerodrome/heliport is made available to flight operations personnel, including flight crews and services responsible for pre-flight information; and

(2) aeronautical information provided for pre-flight planning purposes includes information of operational significance from the elements of aeronautical information products.

Note 1: The elements of aeronautical information products may be limited to national publications and when practicable, those of adjacent States, provided a complete library of aeronautical information is available at a central location and means of direct communications are available with that library.

Note 2: A recapitulation of valid NOTAM of operational significance and other information of urgent character may be made available to flight crews in the form of plain-language Pre-Flight Information

Bulletins (PIB). Guidance material on the preparation of PIB is contained in ICAO Doc 8126.

(b) Geographic coverage for pre-flight information services must be determined and periodically reviewed. In general, the coverage zone must be limited to the Flight Information Region (FIR) within which the aerodrome/heliport is located, the FIR(s) adjacent thereto, and all air routes or portion of routes flown without an intermediate landing, originating at the aerodrome/heliport and extending beyond the FIR(s) mentioned.

(c) Although NOTAM with purpose "M" are regarded as not subject for a briefing but available on request, all NOTAM must be provided for briefing by default and that content reduction must be at user's discretion.

(d) Automated pre-flight information systems must be used to make aeronautical data and aeronautical information available to operations personnel including flight crew members for self-briefing, flight planning and flight information service purposes. The aeronautical data and aeronautical information made available must comply with the provisions of this part.

(e) Self-briefing facilities of an automated pre-flight information system must provide access to operations personnel, including flight crew members and other aeronautical personnel concerned, for consultation as necessary with the AIS by telephone or other suitable telecommunications means. The human/machine interface of such facilities must ensure easy access in a guided manner to all relevant information/data.

(f) Automated pre-flight information systems for the supply of aeronautical data and aeronautical information for self-briefing, flight planning and flight information service must:

(1) provide for continuous and timely updating of the system database and monitoring of the validity and quality of the aeronautical data stored;

(2) permit access to the system by operations personnel including flight crew members, aeronautical personnel concerned and other aeronautical users through suitable telecommunications means;

(3) ensure provision, in paper copy form, of the aeronautical data and aeronautical information accessed, as required;

(4) 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; and

(5) provide for rapid response to a user request for information.

Note: ICAO abbreviations and codes and location indicators are given respectively in the PANS-ABC (ICAO Doc 8400) and ICAO Doc 7910.

(g) Automated pre-flight information systems providing a harmonized, common point of access by operations personnel, including flight crew members and other aeronautical personnel concerned, to aeronautical data and aeronautical information in accordance with (d) and meteorological information in accordance with GACAR Part 179 must be established by an agreement between the AIS provider and the MET service provider.

(h) 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 data, aeronautical information and meteorological information, the AIS provider must remain responsible for the quality and timeliness of the aeronautical data and aeronautical information provided by means of such a system.

Note: The MET service provider remains responsible for the quality of the meteorological information provided by means of such a system in accordance with GACAR Part 179.

§ 175.129 Post-flight information service

(a) For any aerodrome/heliport used for international air operations, the AIS provider must make arrangements to receive information concerning the KSA airspace and operation of air navigation facilities or services noted by flight crews.

(b) The arrangements specified in (a) must ensure that such information is made available to the aeronautical information service (AIS) for distribution as the circumstances necessitate.

(c) For any aerodrome/heliport used for international air operations, the AIS provider must ensure that arrangements have been made to receive information concerning the presence of wildlife hazards observed by flight crews.

(d) The information about the presence of wildlife hazards must be made available to the aeronautical information service for distribution as the circumstances necessitate.

Note : See GACAR Part 139 concerning wildlife hazards.

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SUBPART F –AERONAUTICAL INFORMATION UPDATES

§ 175.131 General specifications

(a) The AIS provider must ensure that aeronautical data and aeronautical information are amended or reissued to keep them up to date.

(b) The same update cycle must be applied to the Aeronautical Information Publication (AIP) and the digital data sets in order to ensure the consistency of the data items that appear in multiple aeronautical information products.

§ 175.133 Aeronautical information regulation and control (AIRAC)

(a) The AIS provider must ensure that information concerning the following circumstances is distributed under the regulated system (AIRAC), i.e. basing establishment, withdrawal or significant changes upon a series of common effective dates at intervals of 28 days:

(1) limits (horizontal and vertical), regulations and procedures applicable to:

(i) flight information regions;
(ii) control areas;
(iii) control zones;
(iv) advisory areas;
(v) Air Traffic Services (ATS) routes;
(vi) permanent danger, prohibited and restricted areas (including type and periods of activity when known) and Air Defence Identification Zones (ADIZ);
(vii) permanent areas or routes or portions thereof where the possibility of interception exists;

(2) positions, frequencies, call signs, identifiers, known irregularities and maintenance periods of radio navigation aids, and communication and surveillance facilities;

(3) holding and approach procedures, arrival and departure procedures, noise abatement procedures and any other pertinent ATS procedures;

(4) transition levels, transition altitudes and minimum sector altitudes;

(5) meteorological facilities (including broadcasts) and procedures;

(6) runways and stopways;

(7) taxiways and aprons;

(8) aerodrome ground operating procedures (including low visibility procedures);

(9) approach and runway lighting; and

(10) aerodrome operating minima if published.

(b) The AIS provider must ensure that:

(1) the information notified under the AIRAC system is not changed further for at least another 28 days after the effective date, unless the circumstance notified is of a temporary nature and would not persist for the full period.
(2) the information provided under the AIRAC system is made available so as to reach recipients at least 28

days in advance of the effective date.

Note: AIRAC information is distributed by the AIS provider at least 42 days in advance of the AIRAC effective dates with the objective of reaching recipients at least 28 days in advance of the effective date.

(3) when information has not been submitted by the AIRAC date, a NIL notification is distributed not later than one cycle before the AIRAC effective date concerned.

(4) implementation dates other than AIRAC effective dates are not used for pre-planned operationally significant changes requiring cartographic work and/or for updating of navigation databases.

(c) The regulated system (AIRAC) must be used for the provision of information relating to the establishment and withdrawal of, and premeditated significant changes in, the circumstances listed below:

(1) position, height and lighting of navigational obstacles;

(2) hours of service of aerodromes, facilities and services;

(3) customs, immigration and health services;

(4) temporary danger, prohibited and restricted areas and navigational hazards, military exercises and mass movements of aircraft; and

(5) temporary areas or routes or portions thereof where the possibility of interception exists.

(d) Whenever major changes are planned and where advance notice is desirable and practicable, information must be made available by the AIS provider so as to reach recipients at least 56 days in advance of the effective date. This must be applied to the establishment of, and premeditated major changes in, the circumstances listed below, and other major changes if deemed necessary:

(1) new aerodromes for international Instrument Flight Rules (IFR) operations;

(2) new runways for IFR operations at international aerodromes;

(3) design and structure of the ATS route network;

(4) design and structure of a set of terminal procedures (including change of procedure bearings due to magnetic variation change);

(5) circumstances listed in § 175.131 (a) if the entire KSA or any significant portion thereof is affected or if cross-border coordination is required.

Note: Guidance material on what constitutes a major change is included in the Aeronautical Information Services Manual (ICAO Doc 8126).

§ 175.135 Aeronautical information product updates: AIP updates

(a) The Aeronautical Information Publication (AIP) must be amended or reissued at such regular intervals as may be necessary to keep it up to date.

(b) Permanent changes to the AIP must be published as AIP Amendments.

(c) Specifications for AIP amendments:

Note: Guidance material on the establishment of intervals between publication dates of AIP Amendments is contained in the Aeronautical Information Services Manual (ICAO Doc 8126).

(1) when an AIP Amendment will not be published at the established interval or publication date, a NIL notification must be originated and distributed by the NOTAM checklist.

(2) recourse to hand amendments or annotations must be kept to a minimum.

(d) Temporary changes of long duration (three months or longer) and information of short duration which contains extensive text and/or graphics must be published as AIP Supplements.

(e) Specifications for AIP Supplements:

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

Note 1: The requirements for NOTAM apply when time constraints do not allow sufficient time for the distribution of an AIP Supplement.
Note 2: Guidance material on the use of AIP Supplements together with examples of such use is contained in the Aeronautical Information Services Manual (ICAO Doc 8126).

§ 175.137 Aeronautical information product updates: NOTAM

(a) The AIS provider must:

(1) ensure that NOTAM are provided in accordance with the requirements of this part; and

(2) originate a Trigger NOTAM when an AIP Amendment or an AIP Supplement is published in accordance with AIRAC procedures.

(b) The AIS provider must originate and issue a NOTAM promptly whenever the information to be distributed is of a temporary nature and of short duration, or when operationally significant permanent changes or temporary changes of long duration are made at short notice, except for extensive text and/or graphics.

(c) A NOTAM must be originated and issued concerning the following information:

(1) establishment, closure or significant changes in operation of aerodrome(s) or heliport(s) or runways;

(2) establishment, withdrawal or significant changes in operation of aeronautical services (aerodromes, AIS, ATS, Communications, Navigation and Surveillance (CNS), Meteorology (MET), Search And Rescue (SAR), etc.);

(3) establishment, withdrawal or significant changes in operational capability of radio navigation and air-ground communication services. This includes: interruption or return to operation, change of frequencies, change in notified hours of service, change of identification, change of orientation (directional aids), change of location, power increase or decrease amounting to 50 per cent or more, change in broadcast schedules or contents, or irregularity or unreliability of operation of any radio navigation and air-ground communication services or limitations of relay stations including operational impact, affected service, frequency and area;

(4) unavailability of back-up and secondary systems, having a direct operational impact;

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

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

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

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

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

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

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

(12) changes in regulations requiring immediate action, e.g. prohibited areas for SAR action;

(13) presence of hazards not otherwise promulgated, which affect air navigation (including obstacles, military exercises and operations, intentional and unintentional radio frequency interferences, rocket launches, displays, fireworks, sky lanterns, rocket debris, races and major parachuting events);

(14) conflict zones which affect air navigation (to include information that is as specific as possible regarding the nature and extent of threats of that conflict and its consequences for civil aviation);

Note: Guidance related to conflict zones is contained in the Risk Assessment Manual for Civil Aircraft Operations Over or Near Conflict Zones (ICAO Doc 10084).

(15) planned laser emissions, laser displays and search lights if pilots' night vision is likely to be impaired;

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

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

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

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

(20) changes in aerodrome/heliport rescue and firefighting category provided (see GACAR Part 139);

(21) 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;

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

(23) observations or forecasts of space weather phenomena, the date and time of their occurrence, the flight levels where provided and portions of the airspace which may be affected by the phenomena;

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

(25) 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 portions thereof which

could be affected and the direction of movement;

(26) 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

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

Note: See GACAR Part 171 concerning contingency arrangements.

(d) The following information must not be notified by NOTAM:

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

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

(3) temporary obstructions in the vicinity of aerodromes/heliports that do not affect the safe operation of aircraft;

(4) partial failure of aerodrome/heliport lighting facilities where such failure does not directly affect aircraft operations;

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

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

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

(8) parachuting when in uncontrolled airspace under VFR (see (c) 13.), when controlled, at promulgated sites or within danger or prohibited areas;

(9) training activities by ground units;

(10) unavailability of back-up and secondary systems if these do not have an operational impact;

(11) limitations to airport facilities or general services with no operational impact;

(12) national regulations not affecting general aviation;

(13) announcement or warnings about possible/potential limitations, without any operational impact;

(14) general reminders on already published information;

(15) availability of equipment for ground units without containing information on the operational impact for airspace and facility users;

(16) information about laser emissions without any operational impact and fireworks below minimum flying heights;

(17) closure of movement area parts in connection with planned work locally coordinated of duration of less than one hour;

(18) closure or unavailability of, or changes in, operation of aerodrome(s)/heliport(s) outside the

aerodrome(s)/heliport(s) operational hours; and

(19) other non-operational information of a similar temporary nature.

(e) Specifications for NOTAM:

(1) NOTAM must be published with sufficient lead time for the affected parties to take any required action, except in the case of unserviceability, volcanic activity, release of radioactive material, toxic chemicals and other events that cannot be foreseen.

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

(3) at least seven days' advance notice must be given of the activation of established danger, restricted or prohibited areas and of activities requiring temporary airspace restrictions other than for emergency operations.

(4) notice of any subsequent cancellation of the activities or any reduction of the hours of activity or the dimensions of the airspace must be given as soon as possible.

(5) Note: Whenever possible, at least 24 hours' advance notice is desirable, to permit timely completion of the notification process and to facilitate airspace utilization planning.

(6) within three months from the issuing of a permanent NOTAM, the information contained in the NOTAM must be included in the aeronautical information products affected.

(7) within three months from the issuing of a temporary NOTAM of long duration, the information contained in the NOTAM must be included in the AIP Supplement.

(8) when a NOTAM with estimated end of validity unexpectedly exceeds the three-month period, a replacement NOTAM must be issued, unless the condition is expected to last for a further period of more than three months; in this case, an AIP Supplement must be issued.

(9) when an AIP Amendment or an AIP Supplement is published in accordance with AIRAC procedures, a so-called "Trigger NOTAM" must be originated giving a brief description of the contents, the effective date and time, and the reference number of the amendment or supplement.

(10) the Trigger NOTAM must come into force on the same effective date and time as the amendment or supplement and must remain valid in the pre-flight information bulletin for a period of fourteen days.

(11) in the case of an AIP Supplement, the Trigger NOTAM must remain valid for a period of fourteen days.

(12) in the case of an AIP Supplement that is valid for less than fourteen days, the Trigger NOTAM must remain valid for the complete validity period of the AIP Supplement.

(13) in the case of an AIP Supplement that is valid for fourteen days or more, the Trigger NOTAM must remain valid for at least fourteen days.

Note: Guidance material for the origination of NOTAM announcing the existence of AIRAC AIP Amendments or AIP Supplements (Trigger NOTAM) is contained in ICAO Doc 8126.

§ 175.139 Aeronautical information product updates: Data set updates

(a) The AIS provider must:

(1) amend or reissue data sets at such regular intervals as may be necessary to keep them up to date; and

(2) issue permanent changes and temporary changes of long duration (three months or longer) made available as digital data in the form of a complete data set or a subset that includes only the differences from the previously issued complete data set.

(b) When made available as a completely reissued data set, the differences from the previously issued complete data set must be indicated.

(c) When temporary changes of short duration are made available as digital data (digital NOTAM), they must use the same aeronautical information model as the complete data set.

(d) Updates to AIP and digital data sets must be synchronized.

(e) Specifications for digital data updates:

(f) the update interval for the digital data sets must be specified in the data product specification.

(1) data sets that have been made available in advance (according to the AIRAC cycle) must be updated with the non-AIRAC changes that occur between the publication and the effective date.

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SUBPART G – QUALITY MANAGEMENT

§ 175.141 Quality management system

Note 1: This subpart provides general requirements on the Quality Management System (QMS) related to Aeronautical Information Management (AIM) processes.
Note 2: Detailed guidance can be found in the Manual on the Quality Management System for Aeronautical Information Management (ICAO Doc 9839).

(a) The AIS provider must ensure that the general requirements for a QMS are to:

(1) develop a quality manual that includes the scope of a QMS as applied to AIM processes;

(2) identify the processes needed for the QMS;

(3) determine the sequence and interaction of these processes;

(4) determine criteria and methods required to ensure the effective operation and control of these processes;

(5) ensure the availability of information necessary to support the operation and monitoring of these processes;

(6) measure, monitor and analyse these processes, and implement action necessary to achieve planned results and continual improvement; and

(7) maintain appropriate records that are necessary to provide confidence of conformity of the processes and resulting product.

(b) The AIS provider must ensure that in the framework of the QMS, a user feedback system is defined and implemented.

Note 1: Quality management may be provided by a single QMS or a series of QMS.
Note 2: The International Organization for Standardization (ISO) 9000 series of quality assurance standards provides a basic framework for the development of a quality assurance program.
Note 3: Formal arrangements concerning data quality between the originator and the Aeronautical Information Service (AIS) provider and between the AIS provider and the next intended user may be used to manage the aeronautical information data chain.

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SUBPART H – AERONAUTICAL DATA REQUIREMENTS

§ 175.145 Data origination requirements

(a) The AIS provider must ensure that:

(1) data is collected and transmitted to the Aeronautical Information Service (AIS) in accordance with the accuracy requirements and integrity classification specified in Appendix 1.

(2) positional data is classified as: surveyed points (e.g. navigation aid positions, runway threshold); calculated points (mathematical calculations from the known surveyed points of points in space, fixes); or declared points (e.g. flight information region boundary points).

(3) geographical coordinates indicating latitude and longitude are determined and reported to the AIS in terms of the World Geodetic System – 1984 (WGS-84) geodetic reference datum.

(4) geographical coordinates that have been transformed into WGS-84 coordinates by mathematical means and whose accuracy of original field work does not meet the applicable requirements contained in Appendix 1 are identified.

(5) in addition 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 Appendix 2 is also published.

§ 175.147 Metadata requirements

(a) The metadata to be collected must include, as a minimum:

(1) the names of the organizations or entities performing any action of originating, transmitting or manipulating the data;

(2) the action performed; and

(3) the date and time the action was performed.

(b) Each data set must include the following minimum set of metadata:

(1) the names of the organization or entities providing the data set;

(2) the date and time when the data set was provided;

(3) period of validity of the data set; and

(4) any limitations with regard to the use of the data set.

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

SUBPART I – PRINTED PRODUCTS

§ 175.149 Printed AIP

(a) When the AIP is issued as a printed volume, it must be published by the AIS provider in loose-leaf form unless the complete publication is reissued at frequent intervals.

(b) Each AIP issued as a printed volume and each page of an AIP issued in loose-leaf form must be so annotated as to indicate clearly:

(1) the identity of the AIP;

(2) the territory covered and subdivisions when necessary;

(3) the identification of the "Kingdom of Saudi Arabia" (issuing State) and "General Authority of Civil Aviation" (authority) and the AIS provider (producing organization); and

(4) page numbers/chart titles.

(c) The issuing State or the joint issuing States must be clearly indicated on the cover and in the table of contents.

(d) The method of amendment of the printed volume AIP must be by means of replacement sheets.

(e) New or revised information must be identified by an annotation against it in the margin. A thick black vertical line or, where the change incorporated covers one line only or a part of a line, a thick black horizontal arrow, is sufficient to identify the change.

(f) Each AIP Amendment page must contain a publication date or, when applicable, an effective date. The cover sheet must contain the publication date and, when applicable, an effective date.

(g) When the AIP is provided in more than one volume, each volume must include a:

(1) preface;

(2) record of AIP Amendments;

(3) record of AIP Supplements;

(4) checklist of AIP pages; and

(5) list of current hand amendments.

(h) When the AIP is published as one volume, the above-mentioned subsections appear only in Part 1 — GEN and the annotation "not applicable" must be entered against each of these subsections in Parts 2 and 3.

(i) A system of page numbering adaptable to the addition or deletion of sheets must be adopted. The page number must include:

(1) an identification of the part of the AIP;

(2) the section; and

(3) the subsection, as applicable; thus, creating a separate set of numbers for each subject (e.g. GEN 2.1-3,

ENR 4.1-1 or AD 2.2-3).

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

(k) The sheet size must be no larger than 210 × 297 mm, except that larger sheets may be used provided they are folded to the same size.

(l) When a small number of charts are to be included and chart size is not larger than 210 mm × 297 mm or allows for folding to these dimensions, they must be contained in the AIP. If, on the other hand, there are many charts and they are frequently amended, it may be convenient to place them in a separate volume with a separate subscription service.

(m) Maps and charts included in the AIP must be paginated in the same manner as other material.

(n) AIP Supplement pages must be coloured in order to be conspicuous, preferably in yellow.

(o) AIP Supplement pages must be kept as the first item in the AIP parts.

Note: To eliminate the need to continuously refer to the front of the AIP for the required information, the Supplements may be divided into specific parts (e.g. GEN, ENR, AD) for insertion in each AIP part, as necessary.

(p) AIP Supplement pages must be kept in the AIP as long as all or some of their contents remain valid.

§ 175.151 Printed AIC

(a) Differentiation and identification of AIC topics according to subjects using colour coding must be practised where the numbers of AIC in force are sufficient to make identification in this form necessary.

(b) AIC must be colour coded by subject where there are sufficient circulars in force to warrant such identification, e.g.:

(4) white — administrative;

(5) yellow — air traffic control (ATC);

(6) pink — safety;

(7) mauve — danger area map; and

(8) green — maps/charts.

SECTION THREE – AERONAUTICAL CHARTS

SUBPART A – AVAILABILITY AND CHART PROVISIONS

§ 175.161 Availability

(a) Information. The Aeronautical Charts service provider must, on request by another Contracting State and when approved by the President, provide all information relating to the Kingdom of Saudi Arabia (KSA) territory that is necessary to enable the provisions of this part to be met.

(b) Charts. The Aeronautical Charts service provider must, when so specified, ensure the availability of charts in whichever of the following ways is appropriate for a particular chart or single sheet of a chart series.

Note: The availability of charts includes specified electronic charts.

(1) For any chart or single sheet of a chart series entirely contained within the territory of KSA, the Aeronautical Charts service provider must produce the chart or sheet under the authority of the President, irrespective of the format in which it is provided.

(2) for any chart or single sheet of a chart series which includes the territory of two or more Contracting States, the States having jurisdiction over the territory so included must determine the manner in which the chart or sheet will be made available. This determination must be made with due regard being given to regional air navigation agreements and to any program of allocation established by ICAO.

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

(c) The Aeronautical Charts service provider must take all reasonable measures to ensure that the information provided, and the aeronautical charts made available are adequate and accurate and that they are maintained up to date by an adequate revision service.

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

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

§ 175.163 Chart provisions

(a) For the aeronautical charts production and revision, the Aeronautical Charts service provider must comply with the requirements of Subpart C and while producing or revising:

(1) Aerodrome Obstacle Chart — ICAO Type A (Operating Limitations) must comply with Subpart D;

(2) Aerodrome Obstacle Chart — ICAO Type B must comply with Subpart E;

(3) Aerodrome Terrain and Obstacle Chart — ICAO (Electronic) must comply with Subpart F

(4) Precision Approach Terrain Chart — ICAO must comply with Subpart G;

(5) En-route Chart — ICAO must comply with Subpart H;

(6) Area Chart — ICAO must comply with Subpart I;

(7) Standard Departure Chart — Instrument (SID) — ICAO must comply with Subpart J;

(8) Standard Arrival Chart — Instrument (STAR) — ICAO must comply with Subpart K;

(9) Instrument Approach Chart — ICAO must comply with Subpart L;

(10) Visual Approach Chart — ICAO must comply with Subpart M;

(11) Aerodrome/Heliport Chart — ICAO must comply with Subpart N;

(12) Aerodrome Ground Movement Chart — ICAO must comply with Subpart O;

(13) Aircraft Parking/Docking Chart — ICAO must comply with Subpart P;

(14) World Aeronautical Chart — ICAO 1:1 000 000 must comply with Subpart Q;

(15) Aeronautical Chart — ICAO 1:500 000 must comply with Subpart R;

(16) Aeronautical Navigation Chart — ICAO Small Scale must comply with Subpart S;

(17) Plotting Chart — ICAO must comply with Subpart T;

(18) Electronic Aeronautical Chart Display — ICAO must comply with Subpart U;

(19) ATC Surveillance Minimum Altitude Chart — ICAO must comply with Subpart V.

SUBPART B – MANDATORY, NON-MANDATORY AND CONDITIONALLY REQUIRED CHARTS

§ 175.165 Mandatory charts

(a) The mandatory charts are:

(1) Aerodrome Obstacle Chart — ICAO Type A.

(2) Precision Approach Terrain Chart — ICAO.

(3) Enroute Chart — ICAO.

(4) Instrument Approach Chart — ICAO.

(5) Aerodrome/Heliport Chart — ICAO; and

(6) the World Aeronautical Chart — ICAO, 1:1 000 000.

(b) For all aerodromes used by international civil aviation, the Aeronautical Charts service provider must ensure that Precision Approach Terrain Chart is produced for all precision approach runways Categories II and III, and the Instrument Approach Chart where instrument approach procedures have been established.

(c) The information required by the Precision Approach Terrain Chart — ICAO may be provided in the Aerodrome Terrain and Obstacle Chart — ICAO (Electronic). Where this occurs, the Precision Approach Terrain Chart — ICAO is not required.

(d) For all aerodromes regularly used by international civil aviation, the Aeronautical Charts service provider must ensure that Aerodrome/Heliport Chart is produced, as well as Aerodrome Obstacle Chart, Type A where significant obstacles exist in the take-off flight-path areas.

(e) Where the Aerodrome Terrain and Obstacle Chart — ICAO (Electronic) is made available, the Aerodrome Obstacle Chart — ICAO Type A (Operating Limitations) is not required.

(f) The Aeronautical Charts service provider must ensure that Enroute Chart is produced for all areas within Flight Information Regions (FIR) and the World Aeronautical Chart — ICAO 1:1 000 000 is produced for all areas allocated to KSA based on regional agreement. Sheet layout index for the World Aeronautical Chart – ICAO 1:1000 000 is provided in in Appendix 12.

§ 175.167 Non-mandatory charts

The Aeronautical Charts service provider must ensure that the charts, listed in this paragraph, are considered “non-mandatory” charts, which means that these must be produced only if the availability of these charts would contribute to the safety, regularity and efficiency of aircraft operations:

(a) The Aerodrome Obstacle Chart — ICAO Type B must be produced only where a need exists for a chart to assist in the determination of critical heights, e.g., for circling procedures, or of procedures for use in the event of an emergency during take-off or landing, and of obstacle clearing and marking criteria. Where the Aerodrome Terrain and Obstacle Chart — ICAO (Electronic) is made available, Aerodrome Obstacle Chart — ICAO Type B is not required.

(b) The Aerodrome Ground Movement Chart — ICAO is a supplementary chart which must be produced only where the detailed information needed for the ground movement of aircraft along taxiways to and from the aircraft stands and the parking and docking of aircraft, cannot be shown with sufficient clarity on the Aerodrome/Heliport Chart — ICAO.

(c) The Aircraft Parking/Docking Chart — ICAO is a supplementary chart which must be made available only where, due to the complexity of terminal facilities, the information on the ground movement of aircraft between the taxiways and the aircraft stands and the parking/docking of aircraft cannot be shown with sufficient clarity on the Aerodrome/Heliport Chart — ICAO or on the Aerodrome Ground Movement Chart — ICAO.

(d) The Aeronautical Chart — ICAO 1:500 000 and the Aeronautical Navigation Chart — Small Scale must be provided only when operational requirements for visual navigation or chart production considerations indicate a need for these charts either as a substitute for or to supplement the World Aeronautical Chart — ICAO 1:1000000.

(e) Plotting Chart — ICAO. These charts are a useful adjunct where a need exists for a chart which will provide a means of maintaining a continuous flight record of the aircraft position by various fixing methods and dead reckoning and maintain an intended flight path. These charts would be appropriate to major air routes over oceanic areas and sparsely settled areas flown by international commercial air transport.

(f) ATC Surveillance Minimum Altitude Chart — ICAO is a supplementary chart which enable flight crews to monitor and cross-check altitudes assigned by a controller using an ATS surveillance system.

§ 175.169 Conditionally required charts

The Aeronautical Charts service provider must ensure that the production of the charts listed below is "conditional", which means that the availability of these charts is required only if certain conditions/circumstances prevail:

(a) The Area Chart — ICAO is to be made available only where the air traffic services routes or position reporting requirements are complex and cannot be adequately shown on the Enroute Chart — ICAO.

(b) The Standard Departure Chart — Instrument (SID) — ICAO must be produced wherever a standard departure route — instrument has been established and cannot be shown with sufficient clarity on the Area Chart — ICAO.

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

(d) The Visual Approach Chart — ICAO has to be made available for all aerodromes used by international civil aviation where only limited navigation facilities are available or radio communication facilities are not available or no adequate aeronautical charts of the aerodrome and its surroundings at 1:500 000 or greater scale are available, or where visual approach procedures have been established.

SUBPART C — GENERAL SPECIFICATIONS

§ 175.171 General

The regulations contained in this Subpart are applicable to all ICAO aeronautical charts unless otherwise stated in the specifications of the chart concerned.

§ 175.173 Operational requirements for charts

(a) For the purposes of this part, the total flight is divided into the following phases:

(1) Phase 1 — Taxi from aircraft stand to take-off point.

(2) Phase 2 — Take-off and climb to en-route ATS route structure.

(3) Phase 3 — En-route ATS route structure.

(4) Phase 4 — Descent to approach.

(5) Phase 5 — Approach to land and missed approach.

(6) Phase 6 — Landing and taxi to aircraft stand.

(b) The Aeronautical Charts service provider must ensure that each type of chart provides information relevant to the function of the chart and its design must observe Human Factors principles which facilitate its optimum use.

Note: Guidance material on the application of Human Factors principles can be found in the Human Factors Training Manual (ICAO Doc 9683).

(c) The Aeronautical Charts service provider must ensure that each type of chart provides information appropriate to the phase of flight to ensure the safe and expeditious operation of the aircraft.

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

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

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

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

(h) The charts must be True North orientated.

(i) The basic sheet size of the charts must be in printable format.

§ 175.175 Titles

The title of a chart or chart series prepared in accordance with the specifications contained in this part and intended to satisfy the function of the chart must be that of the relevant chapter heading as modified by

application of any Standard contained therein, except that such title must not include "ICAO" unless the chart conforms with all regulations specified in this subpart and any specified for the particular chart.

§ 175.177 Miscellaneous information

(a) The marginal note layout must be as given in Appendix 9, except as otherwise specified for a particular chart.

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

(1) designation or title of the chart series.

Note: The title may be abbreviated.

(2) name and reference of the sheet.

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

(c) A legend to the symbols and abbreviations used must be provided. The legend must be on the face or reverse of each chart except that, where it is impracticable for reasons of space, a legend may be published separately.

(d) The name and adequate address of the producing agency must 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.

§ 175.179 Symbols

(a) Symbols used must conform to those shown in Appendix 10 — ICAO Chart Symbols, except that where it is desired to show on an aeronautical chart special features or items of importance to civil aviation for which no ICAO symbol is at present provided, any appropriate symbol may be chosen for this purpose, provided that it does not cause confusion with any existing ICAO chart symbol or impair the legibility of the chart.

Note: The size and prominence of symbols and the thickness and spacing of lines may be varied according to the scale and functions of the chart, with due regard to the importance of the information they convey.

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

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

(d) The Aeronautical Charts Service provider must ensure that symbols are shown in the manner specified in (b), (c) and Appendix 10 — ICAO Chart Symbols, symbol number 121.

§ 175.181 Units of measurement

(a) Distances must be derived as geodesic distances.

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

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

(d) Linear dimensions on aerodromes and short distances must be expressed in metres.

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

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

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

§ 175.183 Scale and projection

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

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

§ 175.185 Date of validity of aeronautical information

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

§ 175.187 Spelling of geographical names

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

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

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

(d) In areas where Romanized names have not been officially produced or adopted, and outside the territory of KSA, names must be transliterated from the non-Roman alphabet form by the system generally used by the producing agency.

§ 175.189 Abbreviations

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

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

§ 175.191 Political boundaries

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

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

Note: In the case of a dependent territory, the name of the sovereign State may be added in brackets.

§ 175.193 Colors

Colors used on charts must conform to Appendix 11 — Color Guide.

§ 175.195 Relief

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

(1) orientation and identification.

(2) safe terrain clearance.

(3) clarity of aeronautical information when shown.

(4) planning.

Note: Relief is usually portrayed by combinations of contours, hypsometric tints, spot elevations and hill shading, the choice of method being affected by the nature and scale of the chart and its intended use.

(b) Where relief is shown by hypsometric tints, the tints used must be based on those shown in the Hypsometric Tint Guide in Appendix 11.

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

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

§ 175.197 Prohibited, restricted and danger areas

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

Note: Nationality letters are those contained in ICAO Doc 7910 — Location Indicators.

§ 175.199 Air traffic services airspaces

(a) When ATS airspace is shown on a chart, the class of airspace, the type, name or call sign, the vertical limits and the radio frequency(ies) to be used must be indicated and the horizontal limits depicted in accordance with Appendix 10 — ICAO Chart Symbols.

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

§ 175.201 Magnetic variation

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

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

Note: The date and the annual change may be shown.

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

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

§ 175.203 Typography

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

§ 175.205 Aeronautical data

(a) The Aeronautical Charts service provider must 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 § 175.85. The execution of such quality management must be made demonstrable for each function stage, when required. In addition, the Aeronautical Charts service provider must ensure that established procedures exist in order that aeronautical data at any moment is traceable to its origin so to allow any data anomalies or errors, detected during the production/maintenance phases or in the operational use, to be corrected.

Note: Specifications governing the quality system are given in GACAR Part 175, subpart C.

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

Note: Specifications concerning the chart resolution for aeronautical data are contained in Appendix 1.

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

Note: Specifications concerning the integrity classification related to aeronautical data are provided in Appendix 1.

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

§ 175.207 Common reference systems

(a) Horizontal reference system

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

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

(2) Geographical coordinates which have been transformed into WGS-84 coordinates but whose accuracy of original field work does not meet the requirements in ICAO Annex 11, Chapter 2, and ICAO Annex 14, Volumes I and II, Chapter 2, must be identified by an asterisk.

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

Note 1: Specifications concerning the determination and reporting (accuracy of field work and data integrity) of WGS-84-related aeronautical coordinates for geographical positions established by air traffic services are given in ICAO Annex 11, Chapter 2; and for aerodrome/heliport-related positions, in ICAO Annex 14, Volumes I and II, Chapter 2.

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

(b) Vertical reference system

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

Note 1: The geoid globally most closely approximates MSL. It is defined as the equipotential surface in the gravity field of the Earth that coincides with the undisturbed MSL extended continuously through the continents.

Note 2: Gravity-related heights (elevations) are also referred to as orthometric heights while distances of points above the ellipsoid are referred to as ellipsoidal heights.

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

Note 1: Specifications concerning the determination and reporting (accuracy of field work and data integrity) of elevation and geoid undulation at specific positions at aerodromes/heliports are given in ICAO Annex 14, Volumes I and II, Chapter 2.

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

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

Note: Specifications concerning the chart resolution of elevation and geoid undulation are contained in Appendix 1.

(c) Temporal reference system

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

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

SUBPART D. AERODROME OBSTACLE CHART — ICAO TYPE A (OPERATING LIMITATIONS)

§ 175.209 Function

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

§ 175.211 Availability

(a) Aerodrome Obstacle Charts — ICAO Type A (Operating Limitations) must be made available in the manner prescribed in § 175.161 for all aerodromes regularly used by international civil aviation, except for those aerodromes where there are no obstacles in the take-off flight path areas or where the Aerodrome Terrain and Obstacle Chart — ICAO (Electronic) is provided in accordance with Subpart G.

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

§ 175.213 Units of measurement

(a) Elevations must be shown to the nearest half-metre or to the nearest foot.

(b) Linear dimensions must be shown to the nearest half-metre.

§ 175.215 Coverage and scale

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

Note: Isolated distant obstacles that would unnecessarily increase the sheet size may be indicated by the appropriate symbol and an arrow, provided that the distance and bearing from the end of the runway farthest removed and the elevation are given.

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

(c) The horizontal scale must be 1:10 000.

Note: When the production of the charts would be expedited thereby, a scale of 1:20 000 may be used.

(d) The vertical scale must be ten times the horizontal scale.

(e) Linear scales. Horizontal and vertical linear scales showing both metres and feet must be included in the charts.

§ 175.217 Format

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

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

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

(d) The vertical grid must have intervals of 30 m (100 ft) and the horizontal grid must have intervals of 300 m (1000 ft).

(e) The chart must include:

(1) a box for recording the operational data specified in § 175.223 (c);

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

§ 175.219 Identification

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

§ 175.221 Magnetic variation

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

§ 175.223 Aeronautical data

(a) Obstacles

(1) Objects in the take-off flight path area which project above a plane surface having a 1.2 per cent slope and having a common origin with the take-off flight path area must be regarded as obstacles, except that obstacles lying wholly below the shadow of other obstacles as defined in (2) need not be shown. Mobile objects such as boats, trains and trucks, which may project above the 1.2 per cent plane, must be considered obstacles but must not be considered as being capable of creating a shadow.

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

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

(b) Take-off flight path area

(1) The take-off flight path area consists of a quadrilateral area on the surface of the earth lying directly below, and symmetrically disposed about, the take-off flight path. This area has the following characteristics:

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

(ii) its width at the point of origin is 180 m and this width increases at the rate of 0.25D to a maximum of

1 800 m, where D is the distance from the point of origin;

(iii) it extends to the point beyond which no obstacles exist or to a distance of 10.0 km, whichever is the lesser.

(2) For runways serving aircraft having operating limitations which do not preclude the use of a take-off flight path gradient of less than 1.2 per cent, the extent of the take-off flight path area specified in 3.8.2.1 c) must be increased to not less than 12.0 km and the slope of the plane surface specified in 3.8.1.1 and 3.8.1.2 must be reduced to 1.0 per cent or less.

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

(c) Declared distances

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

(i) take-off run available;

(ii) accelerate-stop distance available;

(iii) take-off distance available;

(iv) landing distance available.

Note: In ICAO Annex 14, Volume I, Attachment A, Section 3, guidance is given on declared distances.

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

(d) Plan and profile views

(1) The plan view must show:

(i) the outline of the runways by a solid line, including the length and width, the magnetic bearing to the nearest degree, and the runway number;

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

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

(iv) alternative take-off flight path areas. When alternative take-off flight path areas not centred on the extension of the runway centre line are shown, notes must be provided explaining the significance of such areas;

(v) obstacles, including:

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

Note: This does not exclude the necessity for indicating critical spot elevations within the take-off flight path area.

(2) The nature of the runway and stopway surfaces must be indicated.

(3) Stopways must be identified as such and must be shown by a broken line.

(4) When stopways are shown, the length of each stopway must be indicated.

(5) The profile view must show:

(i) the profile of the centre line of the runway by a solid line and the profile of the centre line of any associated stopways and clearways by a broken line;

(ii) the elevation of the runway centre line at each end of the runway, at the stopway and at the origin of each take- off flight path area, and at each significant change in slope of runway and stopway;

(iii) obstacles, including:

- each obstacle by a solid vertical line extending from a convenient grid line over at least one other grid line to the elevation of the top of the obstacle;
- identification of each obstacle;
- the limits of penetration of obstacles of large extent in a distinctive manner identified in the legend.

Note: An obstacle profile consisting of a line joining the tops of each obstacle and representing the shadow created by successive obstacles may be shown.

§ 175.225 Accuracy

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

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

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

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

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

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

SUBPART E. AERODROME OBSTACLE CHART — ICAO TYPE B

§ 175.227 Function

This chart must provide information to satisfy the following functions:

(a) the determination of minimum safe altitudes/heights including those for circling procedures;

(b) the determination of procedures for use in the event of an emergency during take-off or landing;

(c) the application of obstacle clearing and marking criteria; and

(d) the provision of source material for aeronautical charts.

§ 175.229 Availability

(a) Aerodrome Obstacle Charts — ICAO Type B must be made available, in the manner prescribed in § 175.161, for all aerodromes regularly used by international civil aviation except for those aerodromes where the Aerodrome Terrain and Obstacle Chart — ICAO (Electronic) is provided in accordance with Subpart G.

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

§ 175.231 Units of measurement

(a) Elevations must be shown to the nearest half-metre or to the nearest foot.

(b) Linear dimensions must be shown to the nearest half-metre.

§ 175.233 Coverage and scale

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

Note: Isolated distant obstacles that would unnecessarily increase the sheet size may be indicated by the appropriate symbol and an arrow, provided that the distance and bearing from the aerodrome reference point and elevation are given.

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

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

§ 175.235 Format

The charts must include:

(a) Any necessary explanation of the projection used;

(b) Any necessary identification of the grid used;

(c) A notation indicating that obstacles are those which penetrate the surfaces specified in ICAO Annex 14, Volume I, Chapter 4;

(d) A box for recording amendments and dates thereof; and

(e) Outside the neat line, every minute of latitude and longitude marked in degrees and minutes.

Note: Lines of latitude and longitude may be shown across the face of the chart.

§ 175.237 Identification

The chart must be identified by the name of the country in which the aerodrome is located, the name of the city or town or area which the aerodrome serves, and the name of the aerodrome.

§ 175.239 Culture and topography

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

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

(c) All objects, either cultural or natural, that project above the take-off and approach surfaces specified in § 175.243 or the clearing and marking surfaces specified in ICAO Annex 14, Volume I, Chapter 4, must be shown.

(d) Roads and railroads within the take-off and approach area, and less than 600 m (2 000 ft) from the end of the runway or runway extensions, must be shown.

Note: Geographical names of features may be shown if of significance.

§ 175.241 Magnetic variation

The chart must show a compass rose orientated to the True North, or a North point, showing the magnetic variation to the nearest degree with the date of magnetic information and annual change.

§ 175.243 Aeronautical data

(a) The charts must show:

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

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

(3) the length and width of the runway.

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

(5) the elevation of the runway centre line at each end of the runway, at the stopway, at the origin of each take-off and approach area, and at each significant change of slope of runway and stopway.

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

(7) stopways identified as such and depicted by a broken line.

(8) the length of each stopway.

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

(10) the length of each clearway.

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

(12) take-off and approach areas.

Note: The take-off area is described in § 175.223 (b). The approach area consists of an area on the surface of the earth lying directly below the approach surface as specified in ICAO Annex 14, Volume I, Chapter 4.

(13) obstacles at their exact location, including:

(i) a symbol indicative of their type.

(ii) elevation.

(iii) identification.

(iv) limits of penetration of large extent in a distinctive manner identified in the legend.

Note: This does not exclude the necessity for indicating critical spot elevations within the take-off and approach areas.

(14) any additional obstacles, as determined by § 175.223 (a)(1) including the obstacles in the shadow of an obstacle, which would otherwise be exempted.

Note: The specifications in ICAO Annex 14, Volume I, Chapter 4, are minimum requirements. Where GACA has established lower surfaces, they may be used in the determination of obstacles.

(b) The nature of the runway and stopway surfaces must be given.

(c) Wherever practicable, the highest object or obstacle between adjacent approach areas within a radius of 5 000 m from the aerodrome reference point must be indicated in a prominent manner.

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

§ 175.245 Accuracy

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

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

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

(1) Take-off and approach areas:

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

(ii) vertical distances: 0.5 m in the first 300 m and increasing at a rate of 1 per 1 000.

(2) Other areas:

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

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

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

SUBPART F. AERODROME TERRAIN AND OBSTACLE CHART — ICAO (ELECTRONIC)

§ 175.247 Function

This electronic chart must portray the terrain and obstacle data in combination with aeronautical data, as appropriate, necessary to:

(a) Enable an operator to comply with the operating limitations of ICAO Annex 6, Part I, Chapter 5, and Part III, Section II, Chapter 3, 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:

(1) instrument procedure design (including circling procedure);

(2) aerodrome obstacle restriction and removal; and

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

§ 175.249 Availability

(a) Aerodrome Terrain and Obstacle Charts — ICAO (Electronic) must be made available in the manner prescribed in § 175.161 for aerodromes regularly used by international civil aviation.

Note 1: Where the Aerodrome Terrain and Obstacle Chart — ICAO (Electronic) is made available, the Aerodrome Obstacle Chart — ICAO Type A (Operating Limitations) and the Aerodrome Obstacle Chart — ICAO Type B are not required (see Subparts E and F).

Note 2: The information required by the Precision Approach Terrain Chart — ICAO may be provided in the Aerodrome Terrain and Obstacle Chart — ICAO (Electronic). Where this occurs, the Precision Approach Terrain Chart — ICAO is not required (see Subpart H).

(b) Aerodrome Terrain and Obstacle Charts — ICAO (Electronic) must be made available in the manner prescribed in § 175.161 for all aerodromes regularly used by international civil aviation.

(c) The Aerodrome Terrain and Obstacle Chart — ICAO (Electronic) must also be made available in hard copy format upon request.

Note: For specifications regarding hard copy printed output, see § 175.259(g).

(d) The ISO 19100 series of standards for geographic information must be used as a general data modelling framework.

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

§ 175.251 Identification

Electronic charts must be identified by the name of the country in which the aerodrome is located, the name of the city or town which the aerodrome serves, and the name of the aerodrome.

§ 175.253 Chart coverage

The extent of each chart must be sufficient to cover Area 2 as specified in this part.

§ 175.255 Chart content

(a) General

(1) when developing computer graphic applications that are used to portray features on the chart, the relationships between features, feature attributes, and the underlying spatial geometry and associated topological relationships must be specified by an application schema. Portrayed information must be provided on the basis of portrayal specifications applied according to defined portrayal rules. Portrayal specifications and portrayal rules must not be part of the data set. Portrayal rules must be stored in a portrayal catalogue which must make reference to separately stored portrayal specifications.

Note: ISO Standard 19117 contains a definition of the schema describing the portrayal mechanism of feature-based geographic information, while ISO Standard 19109 contains rules for application schema. Spatial geometry and associated topological relationships are defined in ISO Standard 19107.

(2) symbols used to portray features must be in accordance with § 175.179 and Appendix 10 — ICAO Chart Symbols.

(b) Terrain features

(1) the terrain features, and associated attributes, to be portrayed and database-linked to the chart must be based on the terrain data sets which satisfy the requirements of this part.

Note: Specifications concerning terrain data sets are contained in Appendices 1, 6 and 8.

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

Note: the DEM for Area 2 post spacing (grid) is specified at 1 arc second (approximately 30 m).

(3) representation of terrain surface must be provided as a selectable layer of contour lines in addition to the DEM.

(4) an ortho-rectified image which matches the features on the DEM with features on the overlying image must be used to enhance the DEM. The image must be provided as a separate selectable layer.

(5) the portrayed terrain features must be linked to the following associated attributes in the database(s):

(i) horizontal positions of grid points in geographic coordinates and elevations of the points;

(ii) surface type;

(iii) contour line values, if provided; and

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

(6) additional terrain attributes provided in the database(s) must be linked to the portrayed terrain features.

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

(c) Obstacle features

(1) obstacle features, and associated attributes, portrayed or database-linked to the chart must be based on obstacle data sets which satisfy the requirements of this part.

Note: Specifications concerning obstacle data sets are contained in Appendices 1, 6 and 8.

(2) each obstacle must be portrayed by an appropriate symbol and obstacle identifier.

(3) the portrayed obstacle feature must be linked to the following associated attributes in the database(s):

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

(ii) obstacle type; and

(iii) obstacle extent, if appropriate.

(4) additional obstacle attributes provided in the database(s) must be linked to the portrayed obstacle feature.

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

(d) Aerodrome features

(1) aerodrome features, and associated attributes, portrayed and database-linked to the chart must be based on aerodrome data which satisfy the requirements of this part.

Note: Specifications concerning aerodrome features and associated attributes are contained in Appendix 1.

(2) the following aerodrome features must be portrayed by an appropriate symbol:

(i) aerodrome reference point;

(ii) runway(s), with designation numbers, and if available, stopway(s) and clearway(s); and

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

(3) the portrayed aerodrome feature must be linked to the following associated attributes in the database(s):

(i) geographical coordinates of the aerodrome reference point.

(ii) aerodrome magnetic variation, year of information and annual change.

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

(iii) length and width of runway(s), stopway(s) and clearway(s).

(iv) type of surface of runway(s) and stopway(s).

(v) magnetic bearings of the runway(s) to the nearest degree.

(vi) elevations at each end of runway(s), stopway(s) and clearway(s), and at each significant change in slope of runway(s) and stopway(s).

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

Note: GACAR Part 139, provides guidance on declared distances.

(e) Radio navigation aid features

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

Note: Navigation aid feature attributes may be linked to the portrayed navigation aid features in the database(s).

§ 175.257 Accuracy and resolution

(a) The order of accuracy of aeronautical, terrain and obstacle data must be in accordance with its intended use.

Note: Specifications concerning the accuracy of aeronautical, terrain and obstacle data are contained in Appendix 1.

(b) The aeronautical, terrain and obstacle data resolution must be commensurate with the actual data accuracy.

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

§ 175.259 Electronic functionality

(a) It must be possible to vary the scale at which the chart is viewed. Symbols and text size must vary with chart scale to enhance readability.

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

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

(d) The chart must include its own "reader" software.

(e) It must not be possible to remove information from the chart without an authorized update.

(f) When, due to congestion of information, the details necessary to support the function of the chart cannot be shown with sufficient clarity on a single comprehensive chart view, selectable information layers must 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.

(g) It must 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 consist of "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 referenced sheets.

§ 175.261 Chart data product specifications

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

(b) The chart data product specifications must include an overview, a specification scope, a data product identification, data content information, the reference systems used, the data quality requirements, and information on data capture, data maintenance, data portrayal, data product delivery, as well as any additional information available, and metadata.

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

(c) The overview of the chart data product specifications must provide an informal description of the product and must contain general information about the data product. The specification scope of the chart data product specifications must contain the spatial (horizontal) extent of the chart coverage. The chart data product identification must 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.

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

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

(e) The chart data product specifications must include information that defines the reference systems used. This must include the spatial reference system (horizontal and vertical) and, if appropriate, temporal reference system. The chart data product specifications must identify the data quality requirements. This must include a statement on acceptable conformance quality levels and corresponding data quality measures. This statement must 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.

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

(f) The chart data product specifications must include a data capture statement which must be a general description of the sources and of processes applied for the capture of chart data. The principles and criteria applied in the maintenance of the chart must also be provided in the chart data product specifications, including the frequency with which the chart product is updated. Of particular importance must be 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.

(g) The chart data product specifications must contain information on how data are portrayed on the chart, as detailed in § 175.255 (a) (1). The chart data product specifications must also contain data product delivery information which must include delivery formats and delivery medium information.

(h) The core chart metadata elements must be included in the chart data product specifications. Any additional metadata items required to be supplied must 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 data set. Those data sets are described by metadata.

SUBPART G. PRECISION APPROACH TERRAIN CHART — ICAO

§ 175.263 Function

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

§ 175.265 Availability

(a) The Precision Approach Terrain Chart — ICAO must be made available for all precision approach runways Categories II and III at aerodromes used by international civil aviation, except where the requisite information is provided in the Aerodrome Terrain and Obstacle Chart — ICAO (Electronic) in accordance with Subpart G.

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

§ 175.267 Scale

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

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

§ 175.269 Identification

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

§ 175.271 Plan and profile information

(a) The chart must include:

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

(2) an indication where the terrain or any object thereon, within the plan defined in a), differs by ±3 m (10 ft) in height from the centre line profile and is likely to affect a radio altimeter;

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

(b) Where the terrain at a distance greater than 900 m (3 000 ft) from the runway threshold is mountainous or otherwise significant to users of the chart, the profile of the terrain must be shown to a distance not exceeding 2000 m (6 500 ft) from the runway threshold.

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

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SUBPART H. ENROUTE CHART — ICAO

§ 175.273 Function

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

Note: Simplified versions of these charts are appropriate for inclusion in Aeronautical Information Publications to complement the tabulation of communication and navigation facilities.

§ 175.275 Availability

(a) The Enroute Chart — ICAO must be made available in the manner prescribed in § 175.161 for all areas where flight information regions have been established.

Note: As specified in § 175.169, an Area Chart — ICAO may have to be provided.

(b) Where different air traffic services routes, position reporting requirements or lateral limits of flight information regions or control areas exist in different layers of airspace and cannot be shown with sufficient clarity on one chart, separate charts must be provided.

§ 175.277 Coverage and scale

Note 1: A uniform scale for charts of this type cannot be specified due to the varying degree of congestion of information in certain areas.

Note 2: A linear scale based on the mean scale of the chart may be shown.

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

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

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

§ 175.279 Projection

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

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

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

§ 175.281 Identification

Each sheet must be identified by chart series and number.

§ 175.283 Culture and topography

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

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

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

consequent quadrilateral.

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

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

§ 175.285 Magnetic variation

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

§ 175.287 Bearings, tracks and radials

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

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

§ 175.289 Aeronautical data

(a) Aerodromes

All aerodromes used by international civil aviation to which an instrument approach can be made must be shown.

Note: Other aerodromes may be shown.

(b) Prohibited, restricted and danger areas

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

(c) Air traffic services system

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

(2) The components must include the following:

(i) the radio navigation aids associated with the air traffic services system together with their names, identifications, frequencies and geographical coordinates in degrees, minutes and seconds.

(ii) in respect of DME, additionally the elevation of the transmitting antenna of the DME to the nearest 30 m (100ft).

(iii) an indication of all designated airspace, including lateral and vertical limits and the appropriate class of airspace.

(iv) all ATS routes for en-route flight including route designators, the track to the nearest degree in both directions along each segment of the routes and, where established, the designation of the navigation specification(s) including any limitations and the direction of traffic flow.

Note: Guidance material on the organization of ATS routes for en-route flight publication which may be used

to facilitate charting is contained in the ICAO Aeronautical Information Services Manual (Doc 8126).

(v) all significant points which define the ATS routes and are not marked by the position of a radio navigation aid, together with their name-codes and geographical coordinates in degrees, minutes and seconds.

(vi) in respect of waypoints defining VOR/DME area navigation routes, additionally,

- the station identification and radio frequency of the reference VOR/DME;
- the bearing to the nearest tenth of a degree and the distance to the nearest two-tenths of a kilometre (tenth of a nautical mile) from the reference VOR/ DME, if the waypoint is not collocated with it;

(vii) an indication of all compulsory and "on-request" reporting points and ATS/MET reporting points;

(viii) the distances to the nearest kilometre or nautical mile between significant points constituting turning points or reporting points;

Note: Overall distances between radio navigation aids may also be shown.

(ix) change-over points on route segments defined by reference to very high frequency omnidirectional radio ranges, indicating the distances to the nearest kilometre or nautical mile to the navigation aids;

Note: Change-over points established at the mid-point between two aids, or at the intersection of two radials in the case of route which changes direction between the aids, need not be shown for each route segment if a general statement regarding their existence is made.

(x) minimum en-route altitudes and minimum obstacle clearance altitudes, on ATS routes to the nearest higher 50 metres or 100 feet (see ICAO Annex 11, 2.22);

(xi) communication facilities listed with their channels and, if applicable, logon address and satellite voice communications (SATVOICE) number; and

(xii) Air Defence Identification Zone (ADIZ) properly identified.

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

(d) Supplementary information

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

Note 1: For specifications of these charts, see subparts J, K and L.

Note 2: Departure routes normally originate at the end of a runway; arrival routes normally terminate at the point where an instrument approach is initiated.

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

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SUBPART I. AREA CHART — ICAO

§ 175.291 Function

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

(a) the transition between the en-route phase and approach to an aerodrome;

(b) the transition between take-off/missed approach and en-route phase of flight; and

(c) flights through areas of complex ATS routes or airspace structure.

Note: The function described in c) may be satisfied by a separate chart or an inset on an Enroute Chart — ICAO.

§ 175.293 Availability

(a) The Area Chart — ICAO must be made available in the manner prescribed in § 175.161 where the air traffic services routes or position reporting requirements are complex and cannot be adequately shown on an Enroute Chart — ICAO.

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

Note: As specified in § 175.169, a Standard Departure Chart — Instrument (SID) — ICAO and a Standard Arrival Chart— Instrument (STAR) — ICAO may have to be provided (see Subparts K and L).

§ 175.295 Coverage and scale

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

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

§ 175.297 Projection

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

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

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

§ 175.301 Identification

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

Note: The name may be that of the air traffic services centre, the name of the largest city or town situated in the area covered by the chart or the name of the city that the aerodrome serves. Where more than one aerodrome serves the city or town, the name of the aerodrome on which the procedures are based must be added.

§ 175.303 Culture and topography

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

(b) To improve situational awareness in areas where significant relief exists, all relief exceeding 300 m (1 000

ft) above the elevation of the primary aerodrome must be shown by smoothed contour lines, contour values and layer tints printed in brown. Appropriate spot elevations, including the highest elevation within each top contour line, must be shown printed in black. Obstacles must also be shown.

Note 1: The next higher suitable contour line appearing on base topographic maps exceeding 300 m (1 000 ft) above the elevation of the primary aerodrome may be selected to start layer tinting.

Note 2: An appropriate brown colour, on which half-tone layer tinting is to be based, is specified in Appendix 11 Colour Guide for contours and topographic features.

Note 3: Appropriate spot elevations and obstacles are those provided by the Instrument Flight Procedure Services (IFPS) provider.

§ 175.305 Magnetic variation

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

§ 175.307 Bearings, tracks and radials

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

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

§ 175.309 Aeronautical data

(a) Aerodromes

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

(b) Prohibited, restricted and danger areas

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

(c) Area minimum altitudes

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

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

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

(d) Air traffic services system

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

(2) the components must include the following:

(i) the radio navigation aids associated with the air traffic services system, together with their names, identifications, frequencies and geographical coordinates in degrees, minutes and seconds.

(ii) in respect of DME, additionally the elevation of the transmitting antenna of the DME to the nearest 30 m (100ft).

(iii) terminal radio aids which are required for outbound and inbound traffic and for holding patterns.

(iv) the lateral and vertical limits of all designated airspace and the appropriate class of airspace.

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

(vi) holding patterns and terminal routings, together with the route designators, and the track to the nearest degree along each segment of the prescribed airways and terminal routings.

(vii) all significant points which define the terminal routings and are not marked by the position of a radio navigation aid, together with their name-codes and geographical coordinates in degrees, minutes and seconds.

(viii) in respect of waypoints defining VOR/DME area navigation routes, additionally,

- the station identification and radio frequency of the reference VOR/DME.
- the bearing to the nearest tenth of a degree and the distance to the nearest two-tenths of a kilometre (tenth of a nautical mile) from the reference VOR/DME, if the waypoint is not collocated with it.

(ix) an indication of all compulsory and "on-request" reporting points.

(x) the distances to the nearest kilometre or nautical mile between significant points constituting turning points or reporting points;

Note: Overall distances between radio navigation aids may also be shown.

(xi) change-over points on route segments defined by reference to very high frequency omnidirectional radio ranges, indicating the distances to the nearest kilometre or nautical mile to the radio navigation aids;

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

(xii) minimum en-route altitudes and minimum obstacle clearance altitudes, on ATS routes to the nearest higher 50 metres or 100 feet (see ICAO Annex 11, 2.22);

(xiii) established minimum vectoring altitudes to the nearest higher 50 m or 100 ft, clearly identified;

Note 1: Where ATS surveillance systems are used to vector aircraft to or from significant points on a published standard departure or arrival route or to issue clearance for descent below the minimum sector altitude during arrival, the relevant procedures may be shown on the Area Chart — ICAO unless excessive chart clutter will result.

Note 2: Where excessive chart clutter will result, an ATC Surveillance Minimum Altitude Chart — ICAO may be provided (see subpart W), in which case the elements indicated by (xii), need not be duplicated on the Area Chart — ICAO.

(xiv) area speed and level/altitude restrictions where established.

(xv) communication facilities listed with their channels and, if applicable, logon address and SATVOICE number; and

(xvi) an indication of "flyover" significant points.

SUBPART J. STANDARD DEPARTURE CHART — INSTRUMENT (SID) — ICAO

§ 175.311 Function

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

Note 1: Provisions governing the identification of standard departure routes are in ICAO Annex 11, Appendix 3; guidance material relating to the establishment of such routes is contained in the ICAO Air Traffic Services Planning Manual (Doc 9426).

Note 2: Provisions governing obstacle clearance criteria and details of the minimum information to be published are contained in the ICAO Procedures for Air Navigation Services — Aircraft Operations (PANS-OPS, Doc 8168), Volume II, Part II.

§ 175.313 Availability

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

§ 175.315 Coverage and scale

(a) The coverage of the chart must be sufficient to indicate the point where the departure route begins and the specified significant point at which the en-route phase of flight along a designated air traffic services route can be commenced.

Note: The departure route normally originates at the end of a runway.

(b) The chart must be drawn to scale.

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

(d) When the chart is not drawn to scale, the annotation “NOT TO SCALE” must be shown and the symbol for scale- break must be used on tracks and other aspects of the chart which are too large to be drawn to scale.

§ 175.317 Projection

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

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

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

§ 175.319 Identification

The chart must be identified by the name of the city or town or area which the aerodrome serves, the name of the aerodrome and the identification of the standard departure route(s) — instrument as established in accordance with the Procedures for Air Navigation Services — Aircraft Operations (ICAO PANS-OPS, Doc 8168), Volume II, Part I, Section 3, Chapter 5.

Note: The identification of the standard departure route(s) — instrument is provided by the Instrument Flight Procedure Services (IFPS) provider.

§ 175.321 Culture and topography

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

(b) To improve situational awareness in areas where significant relief exists, the chart must be drawn to scale and all relief exceeding 300 m (1 000 ft) above the aerodrome elevation must be shown by smoothed contour lines, contour values and layer tints printed in brown. Appropriate spot elevations, including the highest elevation within each top contour line, must be shown printed in black. Obstacles must also be shown.

Note 1: The next higher suitable contour line appearing on base topographic maps exceeding 300 m (1 000 ft) above the aerodrome elevation may be selected to start layer tinting.

Note 2: An appropriate brown colour, on which half-tone layer tinting is to be based, is specified in Appendix 11 — Colour Guide for contours and topographic features.

Note 3: Appropriate spot elevations and obstacles are those provided by the Instrument Flight Procedure Services (IFPS) provider.

§ 175.323 Magnetic variation

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

§ 175.325 Bearings, tracks and radials

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

Note: A note to this effect may be included on the chart.

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

§ 175.327 Aeronautical data

(a) Aerodromes

(1) the aerodrome of departure must be shown by the runway pattern.

(2) all aerodromes which affect the designated standard departure route — instrument must be shown and identified. Where appropriate, the aerodrome runway patterns must be shown.

(b) Prohibited, restricted and danger areas

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

(c) Minimum sector altitude

(1) the established minimum sector altitude must 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 must be drawn to scale and area minimum altitudes must be shown within quadrilaterals formed by the parallels and meridians. Area

minimum altitudes must also be shown in those parts of the chart not covered by the minimum sector altitude.

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

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

(d) Air traffic services system

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

(2) The components must comprise the following:

(i) a graphic portrayal of each standard departure route — instrument, including:

- for departure procedures designed specifically for helicopters, the term "CAT H" must be depicted in the departure chart plan view;
- route designator;
- significant points defining the route;
- track or radial to the nearest degree along each segment of the route;
- distances to the nearest kilometre or nautical mile between significant points;
- minimum obstacle clearance altitudes, along the route or route segments and altitudes required by the procedure to the nearest higher 50 m or 100 ft and flight level restrictions where established;
- where the chart is drawn to scale and vectoring on departure is provided, established minimum vectoring altitudes to the nearest higher 50 m or 100 ft, clearly identified;

Note 1: Where ATS surveillance systems are used to vector aircraft to or from significant points on a published standard departure route, the relevant procedures may be shown on the Standard Departure Chart — Instrument (SID) — ICAO unless excessive chart clutter will result.

Note 2: Where excessive chart clutter will result, an ATC Surveillance Minimum Altitude Chart — ICAO may be provided (see Subpart W), in which case the elements indicated by (2) (i) 6), need not be duplicated on the Standard Departure Chart — Instrument (SID) — ICAO.

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

when the radio navigation aid is used for conventional navigation:

- Plain language name.
- Identification.
- Morse code.
- Frequency.
- geographical coordinates in degrees, minutes and seconds; and
- for DME, the channel and the elevation of the transmitting antenna of the DME to the nearest 30 m (100ft).

when the radio navigation aid is used as a significant point for area navigation:

- Plain language name; and
- Identification.

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

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

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

(iv) applicable holding patterns.

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

(vi) the position and height of close-in obstacles which penetrate the Obstacle Identification Surface (OIS). A note must be included whenever close-in obstacles penetrating the OIS exist but which were not considered for the published procedure design gradient;

Note: In accordance with ICAO PANS-OPS, Volume II, information on close-in obstacles is provided by the Instrument Flight Procedure Services (IFPS) provider.

(vii) area speed restrictions, where established.

(viii) for PBN procedures, a PBN requirements box;.

Note: Refer to the Procedures for Air Navigation Services — Aircraft Operations (PANS-OPS, ICAO Doc 8168), Volume II, Part III, Section 5 for information on a PBN requirements box.

(ix) all compulsory and "on-request" reporting points.

(x) radio communication procedures, including:

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

(xi) an indication of "flyover" significant points.

(3) A textual description of standard departure route(s) — instrument (SID) and relevant communication failure procedures must be provided and must, whenever feasible, be shown on the chart or on the same page which contains the chart.

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

Note: Appropriate data are those provided by the Instrument Flight Procedure Services (IFPS) provider.

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SUBPART K. STANDARD ARRIVAL CHART — INSTRUMENT (STAR) — ICAO

§ 175.329 Function

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

Note 1: Standard arrival routes — instrument are to be interpreted as including "standard descent profiles", "continuous descent approach", and other non-standard descriptions. In the case of a standard descent profile, the depiction of a cross-section is not required.

Note 2: Provisions governing the identification of standard arrival routes are in ICAO Annex 11, Appendix 3; guidance material relating to the establishment of such routes is contained in the ICAO Air Traffic Services Planning Manual (Doc 9426).

§ 175.331 Availability

The Standard Arrival Chart — Instrument (STAR) — ICAO must be made available where ever a standard arrival route — instrument has been established and cannot be shown with sufficient clarity on the Area Chart.

§ 175.333 Coverage and scale

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

(b) The chart must be drawn to scale.

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

(d) When the chart is not drawn to scale, the annotation "NOT TO SCALE" must be shown and the symbol for scale break must be used on tracks and other aspects of the chart which are too large to be drawn to scale.

§ 175.335 Projection

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

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

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

§ 175.337 Identification

The chart must be identified by the name of the city or town or area which the aerodrome serves, the name of the aerodrome, and the identification of the standard arrival route(s) — instrument as established in accordance with the Procedures for Air Navigation Services — Aircraft Operations (ICAO PANS-OPS, Doc 8168), Volume II, Part I, Section 4, Chapter 2.

Note: The identification of the standard arrival route(s) — instrument is provided by the Instrument Flight Procedure Services (IFPS) provider.

§ 175.339 Culture and topography

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

(b) To improve situational awareness in areas where significant relief exists, the chart must be drawn to scale and all relief exceeding 300 m (1 000 ft) above the aerodrome elevation must be shown by smoothed contour lines, contour values and layer tints printed in brown. Appropriate spot elevations, including the highest elevation within each top contour line, must be shown printed in black. Obstacles must also be shown.

Note 1: The next higher suitable contour line appearing on base topographic maps exceeding 300 m (1 000 ft) above the aerodrome elevation may be selected to start layer tinting.

Note 2: An appropriate brown colour, on which half-tone layer tinting is to be based, is specified in Appendix 11 — Colour Guide for contours and topographic features.

Note 3: Appropriate spot elevations and obstacles are those provided by the Instrument Flight Procedure Services (IFPS) provider.

§ 175.341 Magnetic variation

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

§ 175.343 Bearings, tracks and radials

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

Note: A note to this effect may be included on the chart.

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

§ 175.345 Aeronautical data

(a) Aerodromes

(1) the aerodrome of landing must be shown by the runway pattern.

(2) all aerodromes which affect the designated standard arrival route — instrument must be shown and identified. Where appropriate, the aerodrome runway patterns must be shown.

(b) Prohibited, restricted and danger areas

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

(c) Minimum sector altitude

(1) the established minimum sector altitude must 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 must be drawn to scale and area minimum altitudes must be shown within quadrilaterals formed by the parallels and meridians. Area minimum altitudes must also be shown in those parts of the chart not covered by the minimum sector altitude.

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

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

(d) Air traffic services system

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

(2) the components must comprise the following:

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

- route designator.
- significant points defining the route.
- track or radial to the nearest degree along each segment of the route.
- distances to the nearest kilometre or nautical mile between significant points.
- minimum obstacle clearance altitudes, along the route or route segments and altitudes required by the procedure to the nearest higher 50 m or 100 ft and flight level restrictions where established.
- where the chart is drawn to scale and vectoring on arrival is provided, established minimum. vectoring altitudes to the nearest higher 50 m or 100 ft, clearly identified.

Note 1: Where ATS surveillance systems are used to vector aircraft to or from significant points on a published standard arrival route or to issue clearance for descent below the minimum sector altitude during arrival, the relevant procedures may be shown on the Standard Arrival Chart — Instrument (STAR) — ICAO unless excessive chart clutter will result.

Note 2: Where excessive chart clutter will result, an ATC Surveillance Minimum Altitude Chart — ICAO may be provided (see Subpart W), in which case the elements indicated by (2) (i) 6), need not be duplicated on the Standard Arrival Chart — Instrument (STAR) — ICAO.

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

when the radio navigation aid is used for conventional navigation:

- plain language name.
- identification.
- Morse code.
- frequency.
- geographical coordinates in degrees, minutes and seconds; and
- for DME, the channel and the elevation of the transmitting antenna of the DME to the nearest 30 m (100ft).

when the radio navigation aid is used as a significant point for area navigation:

- plain language name; and
- identification.

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

when the significant point is used for conventional navigation:

- name-code.

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

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

(iv) applicable holding patterns.

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

(vi) area speed restrictions, where established.

(vii) for PBN procedures, a PBN requirements box.

Note: Refer to the Procedures for Air Navigation Services — Aircraft Operations (PANS-OPS, ICAO Doc 8168), Volume II, Part III, Section 5 for information on a PBN requirements box.

(viii) all compulsory and "on-request" reporting points.

(ix) radio communication procedures, including:

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

(x) an indication of "flyover" significant waypoints; and

(xi) for arrival procedures to an instrument approach designed specifically for helicopters, the term "CAT H" must be depicted in the arrival chart plan view.

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

(4) aeronautical database requirements

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

Note: Appropriate data are those provided by the Instrument Flight Procedure Services (IFPS) provider.

SUBPART L. INSTRUMENT APPROACH CHART — ICAO

§ 175.347 Function

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

Note: Detailed criteria for the establishment of instrument approach procedures and the resolutions of associated altitudes/heights are contained in the Procedures for Air Navigation Services — Aircraft Operations (ICAO PANS-OPS, Doc 8168).

§ 175.349 Availability

(a) Instrument Approach Charts — ICAO must be made available for all aerodromes used by international civil aviation where instrument approach procedures have been established by the certified Instrument flight Procedure Services (IFPS) provider.

(b) A separate Instrument Approach Chart — ICAO must normally be provided for each precision approach procedure established by the State.

(c) A separate Instrument Approach Chart — ICAO must normally be provided for each non-precision approach procedure established by the certified Instrument flight Procedure Services (IFPS) provider.

Note: A single precision or non-precision approach procedure chart may be provided to portray more than one approach procedure when the procedures for the intermediate approach, final approach and missed approach segments are identical.

(d) When the values for track, time or altitude differ between categories of aircraft on other than the final approach segment of the instrument approach procedures and the listing of these differences on a single chart could cause clutter or confusion, more than one chart must be provided.

Note: For categories of aircraft, see Procedures for Air Navigation Services — Aircraft Operations (ICAO PANS-OPS, Doc 8168), Volume II, Part I, Section 4, Chapter 9.

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

§ 175.351 Coverage and scale

(a) The coverage of the chart must be sufficient to include all segments of the instrument approach procedure and such additional areas as may be necessary for the type of approach intended.

(b) The scale selected must ensure optimum legibility consistent with:

(1) the procedure shown on the chart;

(2) sheet size.

(c) A scale indication must be given.

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

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

§ 175.353 Format

The sheet size must be in printable format.

§ 175.355 Projection

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

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

§ 175.357 Identification

The chart must be identified by the name of the city or town or area which the aerodrome serves, the name of the aerodrome and the identification of the instrument approach procedure as established in accordance with the Procedures for Air Navigation Services — Aircraft Operations (ICAO PANS-OPS, Doc 8168), Volume II, Part I, Section 4, Chapter 9.

Note: The identification of the instrument approach procedure is provided by the Instrument Flight Procedure Services (IFPS) provider.

§ 175.359 Culture and topography

(a) Culture and topographic information pertinent to the safe execution of the instrument approach procedure, including the missed approach procedure, associated holding procedures and visual manoeuvring (circling) procedure when established, must be shown. Topographic information must be named, only when necessary, to facilitate the understanding of such information, and the minimum must be a delineation of land masses and significant lakes and rivers.

(b) Relief must be shown in a manner best suited to the particular elevation characteristics of the area. In areas where relief exceeds 1 200 m (4 000 ft) above the aerodrome elevation within the coverage of the chart or 600 m (2 000 ft) within 11 km (6 NM) of the aerodrome reference point or when final approach or missed approach procedure gradient is steeper than optimal due to terrain, all relief exceeding 150 m (500 ft) above the aerodrome elevation must be shown by smoothed contour lines, contour values and layer tints printed in brown. Appropriate spot elevations, including the highest elevation within each top contour line, must also be shown printed in black.

Note 1: The next higher suitable contour line appearing on base topographic maps exceeding 150 m (500 ft) above the aerodrome elevation may be selected to start layer tinting.

Note 2: An appropriate brown colour, on which half-tone layer tinting is to be based, is specified in Appendix 11 — Colour Guide for contours and topographic features.

Note 3: Appropriate spot elevations are those provided by the instrument flight procedure services (IFPS) provider.

(c) In areas where relief is lower than specified in 11.7.2, all relief exceeding 150 m (500 ft) above the aerodrome elevation must be shown by smoothed contour lines, contour values and layer tints printed in brown. Appropriate spot elevations, including the highest elevation within each top contour line, must also be shown printed in black.

Note 1: The next higher suitable contour line appearing on base topographic maps exceeding 150 m (500

ft) above the aerodrome elevation may be selected to start layer tinting.

Note 2: An appropriate brown colour, on which half-tone layer tinting is to be based, is specified in Appendix 11 — Colour Guide for contours and topographic features.

Note 3: Appropriate spot elevations are those provided by the Instrument Flight Procedure Services (IFPS) provider.

§ 175.361 Magnetic variation

(a) The magnetic variation must be shown.

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

§ 175.363 Bearings, tracks and radials

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

Note: A note to this effect may be included on the chart.

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

§ 175.365 Aeronautical data

(a) Aerodromes

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

(2) the runway pattern, at a scale sufficiently large to show it clearly, must be shown for:

(i) the aerodrome on which the procedure is based;

(ii) aerodromes affecting the traffic pattern or so situated as to be likely, under adverse weather conditions, to be mistaken for the aerodrome of intended landing.

(3) the aerodrome elevation must be shown to the nearest metre or foot in a prominent position on the chart.

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

(b) Obstacles

(1) obstacles must be shown on the plan view of the chart.

Note: Appropriate obstacles are those provided by The Instrument Flight Procedure Services (IFPS) provider.

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

(3) the elevation of the top of obstacles must be shown to the nearest (next higher) metre or foot.

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

(5) when the heights of obstacles above a datum other than mean sea level are shown, the datum must be the aerodrome elevation except that, at aerodromes having an instrument runway (or runways) with a threshold elevation more than 2 m (7 ft) below the aerodrome elevation, the chart datum must be the threshold elevation of the runway to which the instrument approach is related.

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

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

(c) Prohibited, restricted and danger areas

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

(d) Radio communication facilities and navigation aids

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

(2) when a radio navigation aid is used as a significant point for area navigation, only its plain language name and identification must be shown.

(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 must be shown and identified.

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

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

(6) radio communication frequencies, including call signs, that are required for the execution of the procedures must be shown.

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

(e) Minimum sector altitude or terminal arrival altitude

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

(f) Portrayal of procedure tracks

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

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

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

(iii) any additional procedure track, other than those specified in a) and b), by an arrowed dotted line.

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

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

(vi) the boundaries of any sector in which visual manoeuvring (circling) is prohibited.

(vii) where specified, the holding pattern and minimum holding altitude/height associated with the approach and missed approach.

(viii) caution notes where required, prominently displayed on the face of the chart.

(ix) an indication of "flyover" significant points.

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

(3) a profile must be provided normally below the plan view showing the following data:

(i) the aerodrome by a solid block at aerodrome elevation.

(ii) the profile of the approach procedure segments by an arrowed continuous line indicating the direction of flight.

(iii) the profile of the missed approach procedure segment by an arrowed broken line and a description of the procedure.

(iv) the profile of any additional procedure segment, other than those specified in b) and c), by an arrowed dotted line.

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

(vi) altitudes/heights required by the procedures, including transition altitude, procedure altitudes/heights and Heliport Crossing Height (HCH), where established.

(vii) limiting distance to the nearest kilometre or nautical mile on procedure turn, when specified.

(viii) the intermediate approach fix or point, on procedures where no course reversal is authorized;

(ix) a line representing the aerodrome elevation or threshold elevation, as appropriate, extended across the width of the chart including a distance scale with its origin at the runway threshold.

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

(5) the profile view must include a ground profile or a minimum altitude/height portrayal as follows:

(i) a ground profile shown by a solid line depicting the highest elevations of the relief occurring within the primary area of the final approach segment. The highest elevations of the relief occurring in the secondary areas of the final approach segment shown by a dashed line; or

(ii) minimum altitudes/heights in the intermediate and final approach segments indicated within bounded shaded blocks.

Note 1: For the ground profile portrayal, actual templates of the primary and secondary areas of the final approach segment are provided to the cartographer by the Instrument Flight Procedure Services (IFPS) provider.

Note 2: The minimum altitude/height portrayal is intended for use on charts depicting non-precision approaches with a final approach fix

(g) Aerodrome operating minima

(1) aerodrome operating minima when established by the State must be shown.

(2) the obstacle clearance altitudes/heights for the aircraft categories for which the procedure is designed must be shown; for precision approach procedures, additional OCA/H for Cat D_L aircraft (wing span between 65 m and 80 m and/or vertical distance between the flight path of the wheels and the glide path antenna between 7 m and 8 m) must be published, when necessary.

(h) Supplementary information

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

(i) a distance from the final approach fix, or

(ii) facility or a fix and the corresponding distance from the final approach fix, the distance to the nearest two-tenths of a kilometre or tenth of a nautical mile and a table showing ground speeds and times from the final approach fix to the missed approach point must be shown.

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

(3) for procedures in which DME is not required for use in the final approach segment but where a suitably located DME is available to provide advisory descent profile information, a table showing the altitudes/heights must be included.

(4) a rate of descent table must be shown.

(5) for non-precision approach procedures with a final approach fix, the final approach descent gradient to the nearest one-tenth of a per cent and, in parentheses, descent angle to the nearest one-tenth of a degree must be shown.

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

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

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

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

(10) for approach procedures having PBN segments, a PBN requirements box must be included.

Note: Refer to the Procedures for Air Navigation Services — Aircraft Operations (PANS-OPS, ICAO Doc 8168), Volume II, Part III, Section 5 for information on a PBN requirements box.

(i) Aeronautical database requirements

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

Note: Appropriate data are those provided by the Instrument Flight Procedure Services (IFPS) provider.

(j) For approach procedures having PBN segments, a PBN requirements box shall be included.

Note.— Refer to the Procedures for Air Navigation Services — Aircraft Operations (PANS-OPS, Doc 8168), Volume II, Part III, Section 5 for information on a PBN requirements box.

SUBPART M. VISUAL APPROACH CHART — ICAO

§ 175.367 Function

This chart must provide flight crews with information which will enable them to transit from the en-route/descent to approach phases of flight to the runway of intended landing by means of visual reference.

§ 175.369 Availability

(a) The Visual Approach Chart — ICAO must be made available in the manner prescribed in § 175.161 for all aerodromes used by international civil aviation where:

(1) only limited navigation facilities are available; or

(2) radio communication facilities are not available; or

(3) no adequate aeronautical charts of the aerodrome and its surroundings at 1:500 000 or greater scale are available; or

(4) visual approach procedures have been established.

§ 175.371 Scale

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

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

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

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

§ 175.373 Format

The sheet size must be in printable format.

Note: It would be advantageous to print the charts in several colors, selected to provide maximum legibility in varying degrees and kinds of light.

§ 175.375 Projection

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

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

§ 175.377 Identification

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

§ 175.379 Culture and topography

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

isolated lighthouses).

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

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

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

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

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

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

§ 175.381 Magnetic variation

The magnetic variation must be shown.

§ 175.383 Bearings, tracks and radials

(a) Bearings, tracks and radials must be magnetic except as provided for in (b).

(b) In areas of high latitude, where it is determined by the President of GACA that reference to Magnetic North is impractical, another suitable reference, i.e. True North or Grid North, must be used.

(c) Where bearings, tracks or radials are given with reference to True North or Grid North, this must be clearly indicated. When Grid North is used, its reference grid meridian must be identified. § 175.385 Aeronautical data

§ 175.385 Aeronautical data

(a) Aerodromes

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

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

(b) Obstacles

(1) obstacles must be shown and identified.

(2) the elevation of the top of obstacles must be shown to the nearest (next higher) metre or foot.

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

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

(c) Prohibited, restricted and danger areas

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

(d) Designated airspace

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

(e) Visual approach information

(1) visual approach procedures must be shown where applicable.

(2) visual aids for navigation must be shown as appropriate.

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

(f) Supplementary information

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

(2) radio communication facilities with their frequencies must be shown as appropriate

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SUBPART N. AERODROME/HELIPORT CHART — ICAO

§ 175.387 Function

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

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

(2) from the runway to the aircraft stand.

(b) For helicopter movement:

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

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

(3) along helicopter ground and air taxiways; and

(4) along air transit routes.

(c) It must also provide essential operational information at the aerodrome/heliport.

§ 175.389 Availability

(a) The Aerodrome/Heliport Chart — ICAO must be made available in the manner prescribed in § 175.161 for all aerodromes/heliports regularly used by international civil aviation.

(b) The Aerodrome/Heliport Chart — ICAO must be made available also, in the manner prescribed in § 175.161, for all other aerodromes/heliports available for use by international civil aviation.

Note: As specified in § 175.169, an Aerodrome Ground Movement Chart — ICAO and an Aircraft Parking/Docking Chart — ICAO may have to be provided (see Subpart P and Q); in which case, the elements portrayed on these supplementary charts need not be duplicated on the Aerodrome/Heliport Chart — ICAO.

§ 175.391 Coverage and scale

(a) The coverage and scale must be sufficiently large to show clearly all the elements listed in § 175.397 (a).

(b) A linear scale must be shown.

§ 175.393 Identification

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

§ 175.395 Magnetic variation

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

§ 175.397 Aerodrome/heliport data

(a) This chart must show:

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

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

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

(4) 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.

Note: Bearing strengths may be shown in tabular form on the face or verso of the chart.

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

Note: Bearing strengths or aircraft type restrictions may be shown in tabular form on the face or verso of the chart.

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

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

Note: Bearing strengths or aircraft type restrictions may be shown in tabular form on the face or verso of the chart.

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

Note: Additional information regarding hot spots may be shown in tabular form on the face or verso of the chart.

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

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

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

(12) position of Runway Visual Range (RVR) observation sites.

(13) approach and runway lighting.

(14) location and type of the visual approach slope indicator systems with their nominal approach slope

angle(s), minimum eye height(s) over the threshold of the on-slope signal(s), and where the axis of the system is not parallel to the runway centre line, the angle and direction of the displacement, i.e. left or right;

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

(16) obstacles to taxiing.

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

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

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

(b) For aerodromes accommodating aeroplanes with folding wing tips, the areas where it is safe for aeroplanes with folding wing tips to operate with wing tips extended, must be shown on the chart.

(c) In addition to the items in § 175.397 (a) relating to heliports, the chart must show:

(1) heliport type.

Note: Heliport types are identified in ICAO Annex 14, Volume II, as surface-level, elevated or helideck.

(2) touchdown and lift-off area including dimensions to the nearest metre, slope, type of surface and bearing strength in tonnes.

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

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

(5) helicopter clearway including length and ground profile.

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

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

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

(i) take-off distance available.

(ii) rejected take-off distance available.

(iii) landing distance available.

SUBPART O. AERODROME GROUND MOVEMENT CHART — ICAO

§ 175.399 Function

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

§ 175.401 Availability

The Aerodrome Ground Movement Chart — ICAO must be made available in the manner prescribed in § 175.161 where, due to congestion of information, details necessary for the ground movement of aircraft along the taxiways to and from the aircraft stands cannot be shown with sufficient clarity on the Aerodrome/Heliport Chart — ICAO.

§ 175.403 Coverage and scale

(a) The coverage and scale must be sufficiently large to show clearly all the elements listed in § 175.409.

(b) A linear scale must be shown.

§ 175.405 Identification

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

§ 175.407 Magnetic variation

(a) A True North arrow must be shown.

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

Note: This chart need not be True North orientated.

§ 175.409 Aerodrome data

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

(1) apron elevation to the nearest metre or foot.

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

(3) geographical coordinates in degrees, minutes, seconds and hundredths of seconds for aircraft stands.

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

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

Note: Additional information regarding hot spots may be shown in tabular form on the face or verso of the chart.

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

(7) geographical coordinates in degrees, minutes, seconds and hundredths of seconds for appropriate taxiway centre line points.

(8) the boundaries of the air traffic control service.

(9) relevant communication facilities listed with their channels and, if applicable, logon address.

(10) obstacles to taxiing.

(11) aircraft servicing areas and buildings of operational significance.

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

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

(b) For aerodromes accommodating aeroplanes with folding wing tips, the areas where it is safe for aeroplanes with folding wing tips to operate with wing tips extended, must be shown on the chart.

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SUBPART P. AIRCRAFT PARKING/DOCKING CHART — ICAO

§ 175.411 Function

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

§ 175.413 Availability

The Aircraft Parking/Docking Chart — ICAO must be made available in the manner prescribed in § 175.161 where, due to the complexity of the terminal facilities, the information cannot be shown with sufficient clarity on the Aerodrome/Heliport Chart — ICAO or on the Aerodrome Ground Movement Chart — ICAO.

§ 175.415 Coverage and scale

(a) The coverage and scale must be sufficiently large to show clearly all the elements listed in § 175.421.

(b) A linear scale must be shown.

§ 175.417 Identification

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

§ 175.419 Magnetic variation

(a) A True North arrow must be shown.

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

Note: This chart need not be True North orientated.

§ 175.421 Aerodrome data

(a) This chart must show in a similar manner all the information on the Aerodrome/Heliport Chart — ICAO and the Aerodrome Ground Movement Chart — ICAO relevant to the area depicted, including:

(1) apron elevation to the nearest metre or foot.

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

(3) geographical coordinates in degrees, minutes, seconds and hundredths of seconds for aircraft stands.

(4) taxiway entries with designations, including runway-holding positions and, where established, intermediate holding positions, and stop bars.

(5) where established, hot spot locations with additional information properly annotated.

Note: Additional information regarding hot spots may be shown in tabular form on the face or verso of the chart.

(6) geographical coordinates in degrees, minutes, seconds and hundredths of seconds for appropriate taxiway

centre line points.

(7) the boundaries of the air traffic control service.

(8) relevant communication facilities listed with their channels and, if applicable, logon address.

(9) obstacles to taxiing.

(10) aircraft servicing areas and buildings of operational significance.

(11) VOR checkpoint and radio frequency of the aid concerned.

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

SUBPART Q. WORLD AERONAUTICAL CHART — ICAO 1:1 000 000

§ 175.423 Function

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

Note: This chart may also serve:

(a) *as a basic aeronautical chart:*

(1) when highly specialized charts lacking visual information do not provide essential data.

(2) to provide complete world coverage at a constant scale with a uniform presentation of planimetric data.

(3) in the production of other charts required by international civil aviation.

(b) *as a pre-flight planning chart.*

§ 175.425 Availability

(a) The World Aeronautical Chart — ICAO 1:1 000 000 must be made available in the manner prescribed in § 175.161 for all areas delineated in Appendix 12.

Note: When operational or chart production considerations indicate that operational requirements can be effectively satisfied by Aeronautical Charts — ICAO 1:500 000 or Aeronautical Navigation Charts — ICAO Small Scale, either of these charts may be made available instead of the basic 1:1 000 000 chart.

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

§ 175.427 Scales

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

(1) Kilometres.

(2) nautical miles.

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

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

(c) A conversion scale (metres/feet) must be shown in the margin.

§ 175.429 Format

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

Note: The Arabic language may be used in addition to the English language.

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

(c) The method of folding must be as follows:

Fold the chart on the long axis near the mid-parallel of latitude, face out, with the bottom part of the chart face upward. Fold inward near the meridian, and fold both halves backward in accordion folds.

(d) Whenever practicable, the sheet lines must conform with those shown in the index in Appendix 12.

Note 1: The area covered by a sheet may vary from the lines shown to satisfy particular requirements.

Note 2: The value of adopting identical sheet lines for ICAO 1:1 000 000 Charts and the corresponding sheet of the International Map of the World (IMW), provided aeronautical requirements are not compromised, is recognized.

(e) Overlaps must be provided by extending the chart area on the top and right side beyond the area given on the index. This overlap area must contain all aeronautical, topographical, hydrographical and cultural information. The overlap must extend up to 28 km (15 NM), if possible, but in any case from the limiting parallels and meridians of each chart to the neat line.

§ 175.431 Projection

(a) The projections must be as follows:

(1) between the Equator and 80° latitude: the Lambert conformal conic projection, in separate bands for each tier of charts. The standard parallels for each 4° band must be 40′ south of the northern parallel and 40′ north of the southern parallel;

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

(b) Graticules and graduations must be shown as follows:

(1) Parallels:

Latitude	Distance between parallels	Graduations on parallels
0° to 72°	30′	1′
72° to 84°	30′	5′
84° to 89°	30′	1°
89° to 90°	30′	5°
		(Only on degree parallels from 72° to 89°)

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

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

(d) The length of the graduation marks must be approximately 1.3 mm for the 1' intervals, and 2 mm for the 5' intervals and 2 mm extending on both sides of the graticule line for the 10' intervals.

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

Note: Meridians may be numbered within the body of the chart.

(f) The name and basic parameters of the projection must be indicated in the margin.

§ 175.433 Identification

Sheet numbering must be in conformity with the index in Appendix 12.

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

§ 175.435 Culture and topography

(a) Built-up areas

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

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

(b) Railroads

(1) all railroads having landmark value must be shown.

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

Note 2: Railroads may be named where space permits.

(2) important tunnels must be shown.

Note: A descriptive note may be added.

(c) Highways and roads

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

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

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

(d) Landmarks

Natural and cultural landmarks, such as bridges, prominent transmission lines, permanent cable § installations,

wind turbines, mine structures, forts, ruins, levees, pipelines, rocks, bluffs, cliffs, sand dunes, isolated lighthouses and lightships, when considered to be of importance for visual air navigation, must be shown.

Note: Descriptive notes may be added.

(e) Political boundaries

International boundaries must be shown. Undemarcated and undefined boundaries must be distinguished by descriptive notes.

(f) Hydrography

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

(2) the tint covering large open water areas must be kept very light.

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

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

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

(g) Contours

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

(2) the values of the contours used must be shown.

(h) Hypsometric tints

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

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

(i) Spot elevations

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

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

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

(j) Incomplete or unreliable relief

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

(2) charts on which spot elevations are generally unreliable must 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 must be used with caution."

(k) Escarpments

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

(l) Wooded areas

(1) wooded areas must be shown.

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

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

(m) Date of topographic information

The date of latest information shown on the topographic base must be indicated in the margin.

§ 175.437 Magnetic variation

(a) Isogonic lines must be shown.

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

§ 175.439 Aeronautical data

(a) General

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

(b) Aerodromes

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

(2) the aerodrome elevation, the lighting available, the type of runway surface and the length of the longest runway or channel, shown in abbreviated form for each aerodrome in conformity with the example given in Appendix 10, provided they do not cause undesirable clutter on the chart, must be indicated.

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

(c) Obstacles

(1) obstacles must be shown.

Note: Objects of a height of 100 m (300 ft) or more above ground are normally regarded as obstacles.

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

(d) Prohibited, restricted and danger areas

Prohibited, restricted and danger areas must be shown.

(e) Air traffic services system

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

(2) where appropriate, the Air Defence Identification Zone (ADIZ) must be shown and properly identified.

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

(f) Radio navigation aids

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

(g) Supplementary information

(1) aeronautical ground lights together with their characteristics or their identifications or both must be shown.

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

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

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

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

SUBPART R. AERONAUTICAL CHART — ICAO 1:500 000

§ 175.441 Function

(a) This chart must provide information to satisfy the requirements of visual air navigation for low speed, short- or medium-range operations at low and intermediate altitudes.

Note 1: This chart may be used:

(1) *to serve as a basic aeronautical chart;*

(2) *to provide a suitable medium for basic pilot and navigation training;*

(3) *to supplement highly specialized charts which do not provide essential visual information;*

(4) *in pre-flight planning.*

Note 2: It is intended that these charts be provided for land areas where charts of this scale are required for civil air operations employing visual air navigation independently or in support of other forms of air navigation.

Note 3: Where States produce charts of this series covering their national territories, the entire area being portrayed is usually treated on a regional basis.

§ 175.443 Availability

The Aeronautical Chart — ICAO 1:500 000 must be made available in the manner prescribed in for all areas delineated in Appendix 12.

Note: The selection of this scale as an alternative to the World Aeronautical Chart — ICAO 1:1 000 000 is covered by § 175.425 (a) and (b).

§ 175.445 Scales

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

(1) kilometres,

(2) nautical miles,

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

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

(c) A conversion scale (metres/feet) must be shown in the margin.

§ 175.447 Format

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

Note: The Arabic language may be used in addition to the English language.

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

(c) The method of folding must be as follows:

Fold the chart on the long axis near the mid-parallel of latitude, face out, with the bottom part of the chart face upward. Fold inward near the meridian, and fold both halves backward in accordion folds.

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

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

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

§ 175.449 Projection

(a) A conformal (orthomorphic) projection must be used.

(b) The projection of the World Aeronautical Chart — ICAO 1:1 000 000 must be used.

(c) Parallels must be shown at intervals of 30’.

(d) Meridians must normally be shown at intervals of 30’.

(e) Graduation marks must be shown at 1’ intervals along each whole degree meridian and parallel, extending away from the Greenwich Meridian and from the Equator. Each 10’ interval must be shown by a mark on both sides of the graticule line.

(f) The length of the graduation marks must be approximately 1.3 mm for the 1’ intervals, and 2 mm (0.08 in) for the 5’ intervals and 2 mm (0.08 in) extending on both sides of the graticule line for the 10’ intervals.

(g) All meridians and parallels shown must be numbered in the borders of the chart.

(h) Each meridian and parallel must be numbered within the body of the chart whenever this data is required operationally.

(i) The name and basic parameters of the projection must be indicated in the margin.

§ 175.451 Identification

(a) Each sheet must be identified by a name which must be that of the principal town or of a main geographical feature appearing on the sheet.

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

Letter	Chart quadrant
A	North-West
B	North-East
C	South-East
D	South-West

§ 175.453 Culture and topography

(a) Built-up areas

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

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

(b) Railroads

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

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.

(2) Tunnels must be shown when they serve as prominent landmarks.

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

(c) Highways and roads

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

Note: Roads under construction may be shown.

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

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

(d) Landmarks

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

Note: Descriptive notes may be added.

(e) Political boundaries

International boundaries must be shown. Undemarcated and undefined boundaries must be distinguished by descriptive notes.

Note: Other boundaries may be shown.

(f) Hydrography

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

(2) the tint covering large open water areas must be kept very light.

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

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

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

(g) Contours

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

(2) the values of the contours used must be shown.

(h) Hypsometric tints

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

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

(i) Spot elevations

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

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

(3) the spot elevation of the highest point on any sheet must be cleared of hypsometric tinting.

(j) Incomplete or unreliable relief

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

(2) charts on which spot elevations are generally unreliable must 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 must be used with caution.”

(k) Escarpments

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

(l) Wooded areas

(1) wooded areas must be shown.

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

(m) Date of topographic information

The date of latest information shown on the topographic base must be indicated in the margin.

§ 175.455 Magnetic variation

(a) Isogonic lines must be shown.

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

§ 175.457 Aeronautical data

(a) General

Aeronautical information must be shown consistent with the use of the chart and the revision cycle.

(b) Aerodromes

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

(2) the aerodrome elevation, the lighting available, the type of runway surface and the length of the longest runway or channel, shown in abbreviated form for each aerodrome in conformity with the example given in Appendix 10, provided they do not cause undesirable clutter on the chart, must be indicated.

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

(c) Obstacles

(1) obstacles must be shown.

Note: Objects of a height of 100 m (300 ft) or more above ground are normally regarded as obstacles.

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

(d) Prohibited, restricted and danger areas

Prohibited, restricted and danger areas must be shown.

(e) Air traffic services system

(1) significant elements of the air traffic services system including, where practicable, control zones,

aerodrome traffic zones, control areas, flight information regions and other airspaces in which VFR flights operate must be shown together with the appropriate class of airspace.

(2) where appropriate, the Air Defence Identification Zone (ADIZ) must be shown and properly identified.

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

(f) Radio navigation aids

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

(g) Supplementary information

(1) aeronautical ground lights together with their characteristics or their identifications or both must be shown.

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

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

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

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

SUBPART S. AERONAUTICAL NAVIGATION CHART — ICAO SMALL SCALE

§ 175.459 Function

This chart must:

(a) serve as an air navigation aid for flight crews of long-range aircraft at high altitudes.

(b) provide selective checkpoints over extensive ranges for identification at high altitudes and speeds, which are required for visual confirmation of position.

(c) provide for continuous visual reference to the ground during long-range flights over areas lacking radio or other electronic navigation aids, or over areas where visual navigation is preferred or becomes necessary.

(d) provide a general purpose chart series for long-range flight planning and plotting.

§ 175.461 Availability

The Aeronautical Navigation Chart — ICAO Small Scale must be made available in the manner prescribed in § 175.161 for all areas delineated in Appendix 12.

Note: The selection of this scale as an alternative to the World Aeronautical Chart — ICAO 1:1 000 000 is covered by § 175.425 (a) and (b).

§ 175.463 Coverage and scale

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

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

Note 2: The sheet size may represent the maximum press size available to the producing agency.

(b) The scale must be in the range of 1:2 000 000 to 1:5 000 000.

(c) The scale of the chart must be substituted in the title for the words “Small Scale”.

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

(1) kilometres,

(2) nautical miles,

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

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

(f) A conversion scale (metres/feet) must be shown in the margin.

§ 175.465 Format

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

Note: The Arabic language may be used in addition to the English language.

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

Note: There is no internationally agreed sheet numbering.

§ 175.467 Projection

(a) A conformal (orthomorphic) projection must be used.

(b) The name and basic parameters of the projection must be shown in the margin.

(c) Parallels must be shown at intervals of 1°.

(d) Graduations on the parallels must be shown at sufficiently close intervals compatible with the latitude and the scale of the chart.

(e) Meridians must be shown at intervals compatible with the latitude and the scale of the chart.

(f) Graduations on the meridians must be shown at intervals not exceeding 5’.

(g) The graduation marks must extend away from the Greenwich Meridian and from the Equator.

(h) All meridians and parallels shown must be numbered in the borders of the chart. In addition, when required, meridians and parallels must be numbered within the body of the chart in such a manner that they can be readily identified when the chart is folded.

§ 175.469 Culture and topography

(a) Built-up areas

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

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

(b) Railroads

(1) all railroads having landmark value must be shown.

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

(2) important tunnels must be shown.

Note: A descriptive note may be added.

(c) Highways and roads

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

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

(d) Landmarks

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

Note: Descriptive notes may be added.

(e) Political boundaries

International boundaries must be shown. Undemarcated and undefined boundaries must be distinguished by descriptive notes.

(f) Hydrography

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

(2) the tint covering large open water areas must be kept very light.

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

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

(g) Contours

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

(2) the values of the contours used must be shown.

(h) Hypsometric tints

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

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

(i) Spot elevations

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

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

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

(j) Incomplete or unreliable relief

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

(2) charts on which spot elevations are generally unreliable must 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 must be used with caution."

(k) Escarpments

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

(l) Wooded areas

Wooded areas of large extent must be shown.

(m) Date of topographic information

The date of latest information shown on the topographic base must be indicated in the margin.

(n) Colors

(1) subdued colors must be used for the chart background to facilitate plotting.

(2) good color contrast must be ensured to emphasize features important to visual air navigation.

§ 175.471 Magnetic variation

(a) Isogonic lines must be shown.

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

§ 175.473 Aeronautical data

(a) Aerodromes

Land and water aerodromes and heliports must 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.

(b) Obstacles

Obstacles must be shown.

(c) Prohibited, restricted and danger areas

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

(d) Air traffic services system

(1) significant elements of the air traffic services system must be shown when considered to be of importance to air navigation.

(2) where appropriate, the Air Defence Identification Zone (ADIZ) must be shown and properly identified.

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

(e) Radio navigation aids

Note: Radio aids to navigation may be shown by the appropriate symbol and named.

SUBPART T. PLOTTING CHART — ICAO

§ 175.475 Function

This chart must provide a means of maintaining a continuous flight record of the aircraft position by various fixing methods and dead reckoning in order to maintain an intended flight path.

§ 175.477 Availability

This chart must be made available, in the manner prescribed in § 175.161, to cover major air routes over oceanic areas and sparsely settled areas used by international civil aviation.

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

§ 175.479 Coverage and scale

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

(b) The scale must be governed by the area to be covered.

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

§ 175.481 Format

The sheet must be of a size that can be adapted for use on a navigator's plotting table.

§ 175.483 Projection

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

(b) Parallels and meridians must be shown.

(1) the intervals must be arranged to permit accurate plotting to be carried out with a minimum of time and effort.

(2) graduation marks must be shown at consistent intervals along an appropriate number of parallels and meridians. The interval selected must, regardless of scale, minimize the amount of interpolation required for accurate plotting.

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

(4) if a navigational grid is shown on charts covering the higher latitudes, it must comprise lines parallel to the Meridian or anti-Meridian of Greenwich.

§ 175.485 Identification

Each sheet must be identified by chart series and number.

§ 175.487 Culture and topography

(a) Generalized shore lines of all open water areas, large lakes and rivers must be shown.

(b) Spot elevations for selected features constituting a hazard to air navigation must be shown.

(c) Particularly hazardous or prominent relief features must be emphasized.

Note: Large cities and towns may be shown.

§ 175.489 Magnetic variation

(a) Isogonals must be shown at consistent intervals throughout the chart. The interval selected must, regardless of scale, minimize the amount of interpolation required.

(b) The date of the isogonic information must be shown.

§ 175.491 Aeronautical data

(a) The following aeronautical data must be shown:

(1) aerodromes regularly used by international commercial air transport together with their names.

(2) selected radio aids to navigation that will contribute to position-finding together with their names and identifications.

(3) lattices of long-range electronic aids to navigation, as required.

(4) boundaries of flight information regions, control areas and control zones necessary to the function of the chart.

(5) designated reporting points necessary to the function of the chart.

(6) ocean station vessels.

Note: Other aeronautical data may be shown provided that they do not detract from the legibility of essential information.

(b) Aeronautical ground lights and marine lights useful for air navigation must be shown where other means of navigation are non-existent.

SUBPART U. ELECTRONIC AERONAUTICAL CHART DISPLAY — ICAO

§ 175.493 Function

The Electronic Aeronautical Chart Display — ICAO, with adequate back-up arrangements and in compliance with the requirements of Annex 6 for charts, must enable flight crews to execute, in a convenient and timely manner, route planning, route monitoring and navigation by displaying required information.

§ 175.495 Information available for display

(a) The Electronic Aeronautical Chart Display — ICAO must be capable of displaying all aeronautical, cultural and topographic information required by Subpart G and Subpart I through U.

(b) The Electronic Aeronautical Chart Display — ICAO must be capable of displaying all aeronautical, cultural and topographic information recommended by Subpart G and Subpart I through U.

Note: The Electronic Aeronautical Chart Display — ICAO may display supplementary information, in addition to that required for the equivalent paper chart, which may be considered useful for safe navigation.

§ 175.497 Display requirements

(a) Display categories

(1) information available for display must be subdivided into the following categories:

(i) basic display information, permanently retained on the display and consisting of the minimum information essential for the safe conduct of flight; and

(ii) other display information, which may be removed from the display or displayed individually on demand, and consisting of information not considered essential for the safe conduct of flight.

(2) it must be a simple function to add or remove other display information but must not be possible to remove information contained in the basic display.

(b) Display mode and generation of neighbouring area

(1) the Electronic Aeronautical Chart Display — ICAO must be capable of continuously plotting the aircraft's position in a true motion mode where reset and generation of the surrounding area must take place automatically.

Note: Other modes, such as static chart displays, may be available.

(2) it must be possible manually to change the chart area and the position of the aircraft relative to the edge of the display.

(c) Scale

It must be possible to vary the scale at which a chart is displayed.

(d) Symbols

Symbols used must conform to those specified for electronic charts in Appendix 10 — ICAO Chart Symbols except where it is desired to show items for which no ICAO chart symbol is provided. In these cases, electronic chart symbols must be chosen which:

(1) employ a minimum use of lines, arcs and area fills.

(2) do not cause confusion with any existing aeronautical chart symbol.

(3) do not impair the legibility of the display.

Note: Additional details for each symbol may be added according to the resolution of the output media, but any enhancements may not change the basic recognizability of the symbol.

(e) Display hardware

(1) the effective size of the chart presentation must be sufficient to display the information required by 20.2 without excessive scrolling.

(2) the display must have the capabilities required to accurately portray required elements of Appendix 10 — ICAO Chart Symbols.

(3) the method of presentation must ensure that the displayed information is clearly visible to the observer in the conditions of natural and artificial light experienced in the cockpit.

(4) the display luminance must be adjustable by the flight crew.

§ 175.499 Provision and updating of data

(a) The provision and updating of data for use by the display must be in conformance with the aeronautical data quality system requirements.

Note: For aeronautical data quality system requirements, see § 175.205, and § 175.77.

(b) The display must be capable of automatically accepting authorized updates to existing data. A means of ensuring that authorized data and all relevant updates to that data have been correctly loaded into the display must be provided.

(c) The display must be capable of accepting updates to authorized data entered manually with simple means for verification prior to final acceptance of the data. Updates entered manually must be distinguishable on the display from authorized data and its authorized updates and must not affect display legibility.

(d) A record must be kept of all updates, including date and time of application.

(e) The display must allow the flight crew to display updates so that the flight crew may review the contents of the updates and determine that they have been included in the system.

§ 175.501 Performance tests, malfunction alarms and indications

(a) A means must be provided for carrying out on-board tests of major functions. In case of a failure, the test must display information to indicate which part of the system is at fault.

(b) A suitable alarm or indication of system malfunction must be provided

§ 175.503 Back-up arrangements

To ensure safe navigation in case of a failure of the Electronic Aeronautical Chart Display — ICAO, the provision of adequate back-up arrangements must include:

(a) Facilities enabling a safe takeover of display functions in order to ensure that a failure does not result in a critical situation; and

(b) A back-up arrangement facilitating the means for safe navigation of the remaining part of the flight.

Note: A suitable back-up system may include the carriage of paper charts.

SUBPART V. ATC SURVEILLANCE MINIMUM ALTITUDE CHART — ICAO

§ 175.505 Function

(a) This supplementary chart must provide information that will enable flight crews to monitor and cross-check altitudes assigned by a controller using an ATS surveillance system.

Note: The objectives of the air traffic control service as prescribed in ICAO Annex 11 do not include prevention of collision with terrain. The procedures prescribed in the Procedures for Air Navigation Services — Air Traffic Management (ICAO PANS-ATM, Doc 4444) do not relieve pilots of their responsibility to ensure that any clearances issued by air traffic control units are safe in this respect. When an IFR flight is vectored or is given a direct routing which takes the aircraft off an ATS route, the ICAO PANS-ATM, Chapter 8, 8.6.5.2, applies.

(b) A note indicating that the chart may only be used for cross-checking of altitudes assigned while the aircraft is identified must be prominently displayed on the face of the chart.

§ 175.507 Availability

The ATC Surveillance Minimum Altitude Chart — ICAO must be made available, in the manner prescribed in § 175.161, where vectoring procedures are established and minimum vectoring altitudes cannot be shown adequately on the Area Chart — ICAO, Standard Departure Chart — Instrument (SID) — ICAO or Standard Arrival Chart — Instrument (STAR) — ICAO.

§ 175.509 Coverage and scale

(a) The coverage of the chart must be sufficient to effectively show the information associated with vectoring procedures.

(b) The chart must be drawn to scale.

(c) The chart must be drawn to the same scale as the associated Area Chart — ICAO.

§ 175.511 Projection

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

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

§ 175.513 Identification

The chart must be identified by the name of the aerodrome for which the vectoring procedures are established

or, when procedures apply to more than one aerodrome, the name associated with the airspace portrayed.

Note: The name may be that of the city which the aerodrome serves or, when the procedures apply to more than one aerodrome, that of the air traffic services centre or the largest city or town situated in the area covered by the chart.

§ 175.515 Culture and topography

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

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

Note: Appropriate spot elevations and obstacles are those provided by the Instrument Flight Procedure Services (IFPS) provider.

§ 175.517 Magnetic variation

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

§ 175.519 Bearings, tracks and radials

(a) Bearings, tracks and radials must be magnetic, except as provided for in (b).

(b) In areas of high latitude, where it is determined by the President of GACA that reference to Magnetic North is impractical, another suitable reference, i.e. True North or Grid North, must be used.

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

§ 175.521 Aeronautical data

(a) Aerodromes

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

(2) the elevation of the primary aerodrome to the nearest metre or foot must be shown.

(b) Prohibited, restricted and danger areas

Prohibited, restricted and danger areas must be depicted with their identification.

(c) Air traffic services system

(1) the chart must show components of the established air traffic services system including:

(i) relevant radio navigation aids together with their identifications.

(ii) lateral limits of relevant designated airspace.

(iii) relevant significant points associated with standard instrument departure and arrival procedures.

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

(iv) transition altitude, where established.

(v) information associated with vectoring including:

- minimum vectoring altitudes to the nearest higher 50 m or 100 ft, clearly identified.
- lateral limits of minimum vectoring altitude sectors normally defined by bearings and radials to/from radio navigation aids to the nearest degree or, if not practicable, geographical coordinates in degrees, minutes and seconds and shown by heavy lines so as to clearly differentiate between established sectors.

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

- distance circles at 20-km or 10-NM intervals or, when practicable, 10-km or 5-NM intervals shown as fine dashed lines with the radius indicated on the circumference and centred on the identified aerodrome main VOR radio navigation aid or, if not available, on the aerodrome/heliport reference point.
- notes concerning correction for low temperature effect, as applicable.

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

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

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Appendix 1 to GACAR Part 175 – AERONAUTICAL DATA CATALOGUE

(a) The Aeronautical Data Catalogue is available electronically and provided as part of this regulation.

(b) The Aeronautical Data Catalogue is a general description of the Aeronautical Information Management (AIM) data scope and consolidates all data that can be collected and maintained by the Aeronautical Information Service (AIS) provider. It provides a reference for aeronautical data origination and publication requirements.

(c) The Aeronautical Data Catalogue provides a means to facilitate the identification of the organizations and authorities responsible for the origination of the aeronautical data and aeronautical information. It also provides a common list of terms and facilitates the formal arrangements between data originators and the AIS provider. It includes data quality requirements applicable from origination through to publication.

(d) The Aeronautical Data Catalogue contains the aeronautical data subjects, properties and sub-properties organized in:

Table A1-1 Aerodrome data;
Table A1-2 Airspace data;
Table A1-3 ATS and other routes data;
Table A1-4 Instrument flight procedure data;
Table A1-5 Radio navigation aids/systems data;
Table A1-6 Obstacle data;
Table A1-7 Geographic data;
Table A1-8 Terrain data;
Table A1-9 Data types; and
Table A1-10 Information about national and local regulation, services and procedures.

(e) The Aeronautical Data Catalogue provides detailed descriptions of all subjects, properties and sub-properties, the data quality requirements and the data types.

(f) The data types describe the nature of the property and sub-property and specify the data elements to be collected.

(g) The tables of the Aeronautical Data Catalogue are composed of the following columns:

subject for which data can be collected.

(1) property is an identifiable characteristic of a subject which can be further defined into sub-properties. The classification of a catalogue element as subject, property or sub-property does not impose a certain data model.

(2) the data is classified in different types. See Table A1-9 for more information on data types.

(3) a description of the data element.

(4) notes are additional information or conditions of the provision.

(5) accuracy requirements for aeronautical data are based on a 95 per cent confidence level. For those fixes and points that are serving a dual purpose, e.g. holding point and missed approach point, the higher accuracy applies. Accuracy requirements for obstacle and terrain data are based on a 90 per cent confidence level.

(6) integrity classification.

(7) origination type. Positional data is identified as surveyed, calculated or declared.

(8) publication resolution. The publication resolutions for geographical position data (latitude and longitude) are applicable to coordinates formatted in degrees, minutes and seconds. When a different format is used (such as degrees with decimals for digital data sets) or when the location is significantly further to the north/south, the publication resolution needs to be commensurate with the accuracy requirements.

(9) chart resolution

Appendix 2 to GACAR Part 175 – CONTENTS OF THE AERONAUTICAL INFORMATION PUBLICATION (AIP)

Note 1: The information elements prefixed with "#AIP-DS#" may be omitted when available through the AIP data set (as specified in § 175.097 (f)).

Note 2: The information elements prefixed with "#OBS-DS#" may be omitted when available through the obstacle data set (as specified in § 175.119 (h)).

PART 1 — GENERAL (GEN)

When the AIP is produced as one volume, the preface, record of AIP Amendments, record of AIP Supplements, checklist of AIP pages and list of current hand amendments appear only in Part 1 — GEN, and the annotation "not applicable" must be entered against each of these subsections in Parts 2 and 3.

If 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 pagesand list of current hand amendments must be included in each volume.

GEN 0.1 Preface

Brief description of the AIP, including:

1) name of the publishing authority;
2) applicable ICAO documents;
3) publication media (i.e. printed, online or other electronic media);
4) AIP structure and established regular amendment interval;
5) copyright policy, if applicable; and
6) 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:

1) amendment number;
2) publication date;
3) date inserted (for the AIRAC AIP Amendments, effective date); and
4) initials of officer who inserted the amendment.

GEN 0.3 Record of AIP Supplements

A record of issued AIP Supplements containing:

1) Supplement number;
2) Supplement subject;
3) AIP section(s) affected;
4) period of validity; and
5) cancellation record.

GEN 0.4 Checklist of AIP pages

A checklist of AIP pages containing:

1) page number/chart title; and
2) publication or effective date (day, month by name and year) of the aeronautical information.

GEN 0.5 List of hand amendments to the AIP

A list of current hand amendments to the AIP containing:

1) AIP page(s) affected;
2) amendment text; and
3) AIP Amendment number by which a hand amendment was introduced.

GEN 0.6 Table of contents to Part 1

A list of sections and subsections contained in Part 1 — General (GEN).

Note: Subsections may be listed alphabetically.

GEN 1. NATIONAL REGULATIONS AND REQUIREMENTS

GEN 1.1 Designated authorities

The addresses of designated authorities concerned with the facilitation of international air navigation (civil aviation, meteorology, customs, immigration, health, en-route and aerodrome/heliport charges, agricultural quarantine and aircraft accident investigation) containing, for each authority:

1) designated authority;
2) name of the authority;
3) postal address;
4) telephone number;
5) telefax number;
6) e-mail address;
7) Aeronautical Fixed Service (AFS) address; and
8) website address, if 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) 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) concerningentry, transit and departure of cargo.

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

GEN 1.5 Aircraft instruments, equipment and flight documents

Brief description of aircraft instruments, equipment and flight documents, including:

1) instruments, equipment (including aircraft communication, navigation and surveillance equipment) and flight documents to be carried on aircraft, including any special requirement in addition to the provisions specified in Annex 6, Part I, Chapters 6 and 7; and

2) Emergency Locator Transmitter (ELT), signalling devices and life-saving equipment as presented in Annex 6, Part I, 6.6 and Part II, 2.4.5, where so determined by regional air navigation agreement, for flights over designated land areas.

GEN 1.6 Summary of national regulations and international agreements/conventions

A list of titles and references and, where applicable, summaries of national regulations affecting air navigation, togetherwith a list of international agreements/conventions ratified by the State.

GEN 1.7 Differences from ICAO Standards, Recommended Practices and Procedures

A list of significant differences between national regulations and practices of the State and related ICAO provisions, including:

1) provision affected (Annex and edition number, paragraph); and
2) difference in full text.

All significant differences must be listed under this subsection. All Annexes must be listed in numerical order even if there is no difference to an Annex, in which case a NIL notification must be provided. National differences or thedegree of non-application of the regional supplementary procedures (SUPPs) must be notified immediately following the Annex to which the supplementary procedure relates.

GEN 2. TABLES AND CODES

GEN 2.1 Measuring system, aircraft markings, holidays

GEN 2.1.1 Units of measurement

Description of units of measurement used including table of units of measurement.

GEN 2.1.2 Temporal reference system

Description of the temporal reference system (calendar and time 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

Brief description of the horizontal (geodetic) reference system used, including:
1) name/designation of the reference system;
2) identification and parameters of the projection;
3) identification of the ellipsoid used;
4) identification of the datum used;
5) area(s) of application; and
6) an explanation, if applicable, of the asterisk used to identify those coordinates that do not meet the accuracyrequirements.

GEN 2.1.4 Vertical reference system

Brief description of the vertical reference system used, including:
1) name/designation of the reference system;
2) description of the geoid model used including the parameters required for height transformation between the modelused and EGM-96; and
3) an explanation, if applicable, of the asterisk used to identify those elevations/geoid undulations that do not meet theaccuracy requirements.

GEN 2.1.5 Aircraft nationality and registration marks

Indication of aircraft nationality and registration marks adopted by the State.

GEN 2.1.6 Public holidays

A list of public holidays with indication of services being affected.

GEN 2.2 Abbreviations used in aeronautical information products

A list of alphabetically arranged abbreviations and their respective significations used by the State in its AIP and in the distribution of aeronautical data and aeronautical information with appropriate annotation for those national abbreviations that are different from those contained in the *Procedures for Air Navigation Services — ICAO Abbreviations and Codes* (PANS-ABC, ICAO Doc 8400).

Note: A list of alphabetically arranged definitions/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 aeronautical fixed stations to be used for encoding and decoding purposes. An annotation to locations not connected to the Aeronautical Fixed Service (AFS) must be provided.

GEN 2.5 List of radio navigation aids

#AIP-DS# A list of radio navigation aids arranged alphabetically, containing:

1) identifier;
2) name of the station;
3) type of facility/aid; and
4) indication whether aid serves en-route (E), aerodrome (A) or dual (AE) purposes.

GEN 2.6 Conversion of units of measurement

Tables for conversion or, alternatively, conversion formulae between:

1) nautical miles and kilometres and vice versa;
2) feet and metres and vice versa;
3) decimal minutes of arc and seconds of arc and vice versa; and
4) other conversions as appropriate.

GEN 2.7 Sunrise/sunset

Information on the time of sunrise and sunset including a brief description of criteria used for determination of the times given and either a simple formulae or table from which times may be calculated for any location within its territory/area of responsibility, or an alphabetical list of locations for which the times are given in a table with a reference to the related page in the table and the sunrise/sunset tables for the selected stations/locations, including:

1) station name;
2) ICAO location indicator;
3) geographical coordinates in degrees and minutes;
4) date(s) for which times are given;
5) time for the beginning of morning civil twilight;
6) time for sunrise;
7) time for sunset; and
8) time for the end of evening civil twilight.

GEN 3. SERVICES

GEN 3.1Aeronautical information services

GEN 3.1.1 Responsible service

Description of the Aeronautical Information Service (AIS) provided and its major components, including:

1) service/unit name;
2) postal address;
3) telephone number;
4) telefax number;
5) e-mail address;
6) AFS address;
7) website address, if available;
8) a statement concerning the ICAO documents on which the service is based and a reference to the AIP locationwhere differences, if any, are listed; and

9) an indication if service is not H24.

GEN 3.1.2 Area of responsibility

The area of responsibility for the AIS.

GEN 3.1.3 Aeronautical publications

Description of the elements of the aeronautical information products, including:
1) AIP and related amendment service;
2) AIP Supplements;
3) AIC;
4) NOTAM and Pre-Flight Information Bulletins (PIB);
5) checklists and lists of valid NOTAM; and
6) how they may be obtained.

When an AIC is used to promulgate publication prices, that must be indicated in this section of the AIP.

GEN 3.1.4 AIRAC system

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/heliports

A list of aerodromes/heliports at which pre-flight information is routinely available, including an indication of relevant:

1) elements of the aeronautical information products held;
2) maps and charts held; and
3) general area of coverage of such information.

GEN 3.1.6 Digital data sets

Description of the available data sets, including:
1) data set title;
2) short description;
3) data subjects included;
4) geographical scope; and
5) if applicable, limitations related to its usage.
6) Contact details of how data sets may be obtained, containing:
   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) contact telephone number of the individual, service or organization responsible;
   e) hours of service (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, if necessary, on how and when to contact the individual, service or organization.

GEN 3.2 Aeronautical charts

GEN 3.2.1 Responsible service(s)

Description of service(s) responsible for the production of aeronautical charts, including:

1) service name;
2) postal address;
3) telephone number;
4) telefax number;
5) e-mail address;
6) AFS address;
7) website address, if available;
8) a statement concerning the ICAO documents on which the service is based and a reference to the AIP locationwhere differences, if any, are listed; and
9) an indication if service is not H24.

GEN 3.2.2 Maintenance of charts

Brief description of how aeronautical charts are revised and amended.

GEN 3.2.3 Purchase arrangements

Details of how charts may be obtained, containing:

1) service/sales agency(ies);
2) postal address;
3) telephone number;
4) telefax number;
5) e-mail address;
6) AFS address; and
7) website address, if 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:

1) title of series;
2) scale of series;
3) name and/or number of each chart or each sheet in a series;
4) price per sheet; and
5) date of latest revision.

GEN 3.2.6 Index to the World Aeronautical Chart (WAC) — ICAO 1:1 000 000

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

GEN 3.2.7 Topographical charts

Details of how topographical charts may be obtained, containing:
1) name of service/agency(ies);
2) postal address;
3) telephone number;
4) telefax number;
5) e-mail address;
6) AFS address; and
7) website address, if 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 such information can be obtained.

GEN 3.3 Air traffic services

GEN 3.3.1 Responsible service

Description of the Air Traffic Service (ATS) and its major components, including:
1) service name;
2) postal address;
3) telephone number;
4) telefax number;
5) e-mail address;
6) AFS address;
7) website address, if available;
8) a statement concerning the ICAO documents on which the service is based and a reference to the AIP locationwhere differences, if any, are listed; and
9) an indication if service is not H24.

GEN 3.3.2 Area of responsibility

Brief description of area of responsibility for which ATS is provided.

GEN 3.3.3 Types of services

Brief description of main types of ATS provided.

GEN 3.3.4 Coordination between the operator and ATS

General conditions under which coordination between the operator and air traffic services 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 their addresses arranged alphabetically, containing:

1) unit name;

2) postal address;
3) telephone number;
4) telefax number;
5) e-mail address;
6) AFS address; and
7) website address, if available.

GEN 3.4Communication and navigation services

GEN 3.4.1 Responsible service

Description of the service responsible for the provision of telecommunication and navigation facilities, including:

1) service name;
2) postal address;
3) telephone number;
4) telefax number;
5) e-mail address;
6) AFS address;
7) website address, if available;
8) a statement concerning the ICAO documents on which the service is based and a reference to the AIP locationwhere differences, if any, are listed; and
9) an indication if service is not H24.

GEN 3.4.2 Area of responsibility

Brief description of area of responsibility for which telecommunication service is provided.

GEN 3.4.3 Types of service

Brief description of the main types of service and facilities provided, including:
1) radio navigation services;
2) voice and/or data link services;
3) broadcasting service;
4) language(s) used; and
5) an indication of where detailed information can be obtained.

GEN 3.4.4 Requirements and conditions

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

GEN 3.4.5 Miscellaneous

Any additional information (e.g. selected radio broadcasting stations, telecommunications diagram).

GEN 3.5 Meteorological services

GEN 3.5.1 Responsible service

Brief description of the meteorological service responsible for the provision of meteorological information, including:

1) service name;
2) postal address;
3) telephone number;
4) telefax number;
5) e-mail address;
6) AFS address;
7) website address, if available;
8) a statement concerning the ICAO documents on which the service is based and a reference to the AIP locationwhere differences, if any, are listed; and
9) an indication if service is not H24.

GEN 3.5.2 Area of responsibility

Brief description of area and/or air routes for which meteorological service is provided.

GEN 3.5.3 Meteorological observations and reports

Detailed description of the meteorological observations and reports provided for international air navigation, including:

1) name of the station and the ICAO location indicator;
2) type and frequency of observation including an indication of automatic observing equipment;
3) types of meteorological reports (e.g. METAR) and availability of a trend forecast;
4) 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 (e.g. anemometer at intersection of runways, transmissometer next to touchdown zone, etc.);
5) hours of operation; and
6) 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 meteorological authority 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 meteorological authority for the making and transmission of aircraft reports.

GEN 3.5.7 VOLMET service

Description of VOLMET and/or D-VOLMET service, including:

1) name of transmitting station;
2) call sign or identification and abbreviation for the radio communication emission;
3) frequency or frequencies used for broadcast;
4) broadcasting period;
5) hours of service;
6) list of aerodromes/heliports for which reports and/or forecasts are included; and
7) 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 air trafficservices are provided, including a list of the meteorological watch offices with:

1) name of the meteorological watch office and the ICAO location indicator;
2) hours of service;
3) flight information region(s) or control area(s) served;
4) SIGMET validity periods;
5) specific procedures applied to SIGMET information (e.g. for volcanic ash and tropical cyclones);
6) procedures applied to AIRMET information (in accordance with relevant regional air navigation agreements);
7) ATS unit(s) provided with SIGMET and AIRMET information; and
8) additional information (e.g. concerning any limitation of service, etc.).

GEN 3.5.9 Other automated meteorological services

Description of available automated services for the provision of meteorological information (e.g. automated pre-flightinformation service accessible by telephone and/or computer modem), including:

1) service name;
2) information available;
3) areas, routes and aerodromes covered; and
4) telephone and telefax number(s), e-mail address, and, if available, website address.

GEN 3.6 Search and rescue

GEN 3.6.1 Responsible service(s)

Brief description of service(s) responsible for the provision of Search And Rescue (SAR), including:

1) service/unit name;
2) postal address;
3) telephone number;
4) telefax number;
5) e-mail address;

6) AFS address;

7) website address, if available; and

8) a statement concerning the ICAO documents on which the service is based and a reference to the AIP locationwhere differences, if any, are listed.

GEN 3.6.2 Area of responsibility

Brief description of area of responsibility within which SAR services are provided.
Note: A chart may be included to supplement the description of the area.

GEN 3.6.3 Types of service

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 aircraft.

GEN 3.6.4 SAR agreements

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 aircraft, either with airborne notification only or after flight plan notification.

GEN 3.6.5 Conditions of availability

Brief description of provisions for SAR, including the general conditions under which the service and facilities are available for international use, including an indication of whether a facility available for SAR 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

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

GEN 3.7 Information services

GEN 3.7.1 SWIM Registry(s)/Information Service Overview(s)

When SWIM registries are used, the corresponding Uniform Resource Locator (URL) of each registry is provided. Otherwise, a list of the URLs where information service overviews can be found are provided.

Note: SWIM registries provide a list of available information services with corresponding information service overviews.

GEN 4. CHARGES FOR AERODROMES/HELIPORTSAND AIR NAVIGATION SERVICES

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

GEN 4.1 Aerodrome/heliport charges

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

1) landing of aircraft;
2) parking, hangarage and long-term storage of aircraft;
3) passenger service;
4) security;
5) noise-related items;
6) other (customs, health, immigration, etc.);
7) exemptions/reductions; and
8) methods of payment.

GEN 4.2 Air navigation services charges

Brief description of charges which may be applicable to air navigation services provided for international use, including:

1) approach control;
2) route air navigation services;
3) cost basis for air navigation services and exemptions/reductions; and
4) methods of payment.

PART 2 — EN-ROUTE (ENR)

If 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 pagesand 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.

ENR 0.1 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

The requirement is for publication of the general rules as applied within the State.

ENR 1.2 Visual flight rules

The requirement is for publication of the visual flight rules as applied within the State.

ENR 1.3 Instrument flight rules

The requirement is for publication of the instrument flight rules as applied within the State.

ENR 1.4 ATS airspace classification and description

ENR 1.4.1 ATS airspace classification

Description of ATS airspace classes in the form of the ATS airspace classification table in Annex 11, Appendix 4, appropriately annotated to indicate those airspace classes not used by the State.

ENR 1.4.2 ATS airspace description

Other ATS airspace descriptions as applicable, including general textual descriptions.

ENR 1.5 Holding, approach and departure procedures

ENR 1.5.1 General

The requirement is for a statement concerning the criteria on which holding, approach and departure procedures are established. If different from ICAO provisions, the requirement is for presentation of criteria used in a tabular form.

ENR 1.5.2 Arriving flights

The requirement is to present procedures (conventional or area navigation or both) for arriving flights which are common to flights into or within the same type of airspace. If different procedures apply within a terminal airspace, a note to this effect must be given together with a reference to where the specific procedures can be

found.

ENR 1.5.3 Departing flights

The requirement is to present procedures (conventional or area navigation or both) for departing flights which are common to flights departing from any aerodrome/heliport.

ENR 1.5.4 Other relevant information and procedures

Brief description of additional information, e.g. entry procedures, final approach alignment, holding procedures and patterns.

ENR 1.6 ATS surveillance services and procedures

ENR 1.6.1 Primary radar

Description of primary radar services and procedures, including:
1) supplementary services;
2) the application of radar control service;
3) radar and air-ground communication failure procedures;
4) voice and CPDLC position reporting requirements; and
5) graphic portrayal of area of radar coverage.

ENR 1.6.2 Secondary Surveillance Radar (SSR)

Description of Secondary Surveillance Radar (SSR) operating procedures, including:
1) emergency procedures;
2) air-ground communication failure and unlawful interference procedures;
3) the system of SSR code assignment;
4) voice and CPDLC position reporting requirements; and
5) graphic portrayal of area of SSR coverage.

Note: The SSR description is of particular importance in areas or routes where the possibility of interceptionexists.

ENR 1.6.3 Automatic Dependent Surveillance — Broadcast (ADS-B)

Description of Automatic Dependent Surveillance — Broadcast (ADS-B) operating procedures, including:
1) emergency procedures;
2) air-ground communication failure and unlawful interference procedures;
3) aircraft identification requirements;
4) voice and CPDLC position reporting requirements; and
5) 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 interceptionexists.

ENR 1.6.4 Other relevant information and procedures

Brief description of additional information and procedures, e.g. radar failure procedures and transponder failureprocedures.

ENR 1.7 Altimeter setting procedures

The requirement is for a statement of altimeter setting procedures in use, containing:

1) brief introduction with a statement concerning the ICAO documents on which the procedures are based together with differences to ICAO provisions, if any;
2) basic altimeter setting procedures;
3) description of altimeter setting region(s);
4) procedures applicable to operators (including pilots); and
5) table of cruising levels.

ENR 1.8 Regional supplementary procedures

The requirement is for presentation of regional supplementary procedures (SUPPs) affecting the entire area ofresponsibility.

ENR 1.9 Air traffic flow management and airspace management

Brief description of Air Traffic Flow Management (ATFM) system and airspace management, including:

1) ATFM structure, service area, service provided, location of unit(s) and hours of operation;
2) types of flow messages and descriptions of the formats; and
3) procedures applicable for departing flights, containing:
   a) service responsible for provision of information on applied ATFM measures;
   b) flight plan requirements; and
   c) slot allocations.
4) information on overall responsibility regarding airspace management within FIR(s), details of civil/military airspace allocation and management coordination, structure of manageable airspace (allocation and changes to allocation) and general operating procedures.

ENR 1.10 Flight planning

The requirement is to indicate any restriction, limitation or advisory information related to the flight planning stagewhich may assist the user in the presentation of the intended flight operation, including:

1) procedures for the submission of a flight plan;
2) repetitive flight plan system;
3) changes to the submitted flight plan; and
4) if applicable, description of available flight and flow — information for a collaborative environment (FF-ICE) services, and associated procedures.
   Note. — Provisions concerning FF-ICE services are contained in the Procedures for Air Navigation Services — (PANS-ATM, Doc 4444) and the guidance material is contained in the Manual on Flight and Flow — Information for a Collaborative Environment (FF-ICE) (*Doc 9965*).

ENR 1.11 Addressing of flight plan messages

The requirement is for an indication, in tabular form, of the addresses allocated to flight plans, showing:
1) category of flight (IFR, VFR or both);
2) route (into or via FIR and/or TMA);
3) message address; and
4) if applicable, addressing instructions for FF-ICE services.

ENR 1.12 Interception of civil aircraft

The requirement is for a complete statement of interception procedures and visual signals to be used with a clearindication of whether ICAO provisions are applied and, if not, that differences exist.

Note: A list of significant differences between national regulations and practices of the State and related ICAOprovisions is found in Gen 1.7.

ENR 1.13 Unlawful interference

The requirement is for presentation of appropriate procedures to be applied in case of unlawful interference.

ENR 1.14 Air traffic incidents

Description of air traffic incidents reporting system, including:

1) definition of air traffic incidents;
2) use of the “Air Traffic Incident Reporting Form”;
3) reporting procedures (including in-flight procedures); and
4) purpose of reporting and handling of the form.

Note: A copy of the Air Traffic Incident Report Form (PANS ATM, ICAO Doc 4444, Appendix 4) may be included forreference.

ENR 2. ATS AIRSPACE

ENR 2.1 FIR, UIR, TMA and CTA

#AIP-DS# Detailed description of Flight Information Regions (FIR), Upper Flight Information Regions (UIR), and Control Areas (CTA) (including specific CTA such as TMA), including:

1) name, geographical coordinates in degrees and minutes of the FIR/UIR lateral limits and in degrees, minutes andseconds of the CTA lateral limits, vertical limits and class of airspace;
2) identification of unit providing the service;
3) call sign of aeronautical station serving the unit and language(s) used, specifying the area and conditions, when andwhere to be used, if applicable;
4) frequencies, and if applicable SATVOICE number, supplemented by indications for specific purposes; and
5) remarks.

#AIP-DS# Control zones around military air bases not otherwise described in the AIP must be included in this subsection. Where the requirements of Annex 2 concerning flight plans, two-way communications and positionreporting apply to all flights in order to eliminate or reduce the need for interceptions and/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(s) or portion(s) thereof.

A description of designated areas over which the carriage of an Emergency Locator Transmitter (ELT) is required and where aircraft must 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/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, i.e. True Northor Grid North, may be used.

Note 2: Changeover 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.

Note 3: Guidance material on the organization of ATS route publication is contained in the Aeronautical Information Services Manual (ICAO Doc 8126).

ENR 3.1 Conventional navigation routes

#AIP-DS# Detailed description of conventional navigation routes, including:

1) route designator, designation of the Required Communication Performance (RCP) specification(s), Required Surveillance Performance (RSP) specification(s) applicable to a specified segment(s), names, coded designators or name-codes 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, geodesic distance to the nearest tenth of a kilometre 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 or minimum en-route altitudes, to the nearest higher 50 m or 100 ft, and airspace classification;

4) lateral limits and minimum obstacle clearance altitudes;

5) direction of cruising levels; and

6) remarks, including an indication of the controlling unit, its operating channel and, if applicable, its logon address,SATVOICE number, and any navigation, RCP and RSP specification(s) limitations.

ENR 3.2 Area navigation routes

#AIP-DS# Detailed description of PBN (RNAV and RNP) routes, including:

1) route designator, designation of the Required Communication Performance (RCP) specification(s), navigation specification(s) and/or Required Surveillance Performance (RSP) specification(s) applicable to a specified segment(s), names, coded designators or name-codes 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 an area navigation route, additionally as applicable:

- *a)* station identification of the reference VOR/DME;
- *b)* bearing to the nearest degree and the distance to the nearest tenth of a kilometre or tenth of a nautical milefrom the reference VOR/DME, if the waypoint is not collocated with it; and
- *c)* elevation of the transmitting antenna of DME to the nearest 30 m (100 ft);

3) magnetic reference bearing to the nearest degree, geodesic distance to the nearest tenth of a kilometre 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;
6) the navigation accuracy requirement for each PBN (RNAV or RNP) route segment; and
7) remarks, including an indication of the controlling unit, its operating channel and, if applicable, its logon address, SATVOICE number, and any navigation, RCP and RSP specification(s) limitations.

Note: In relation to Annex 11, Appendix 1, and for flight planning purposes, defined navigation specification isnot considered to be an integral part of the route designator.

ENR 3.3 Other routes

#AIP-DS# The requirement is to describe other specifically designated routes which are compulsory within specifiedarea(s).

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

ENR 3.4 En-route holding

#AIP-DS# The requirement is for a detailed description of en-route holding procedures, containing:

1) holding identification (if any) 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/distance outbound; and
7) indication of the controlling unit and its operating frequency.

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

ENR 4. RADIO NAVIGATION AIDS/SYSTEMS

ENR 4.1 Radio navigation aids — en-route

#AIP-DS# A list of stations providing radio navigation services established for en-route purposes and arrangedalphabetically by name of the station, including:

1) name of the station and magnetic variation to the nearest degree and for VOR, station declination to the nearestdegree used for technical line-up of the aid;
2) identification;
3) frequency/channel for each element;
4) hours of operation;
5) geographical coordinates in degrees, minutes and seconds of the position of the transmitting antenna;
6) elevation of the transmitting antenna of DME to the nearest 30 m (100 ft); and
7) remarks.

If the operating authority of the facility is other than the designated governmental agency, the name of

the operatingauthority must be indicated in the remarks column. Facility coverage must be indicated in the remarks column.

ENR 4.2 Special navigation systems

#AIP-DS# Description of stations associated with special navigation systems (DECCA, LORAN, etc.), including:

1) name of station or chain;
2) type of service available (master signal, slave signal, colour);
3) frequency (channel number, basic pulse rate, recurrence rate, as applicable);
4) hours of operation;
5) geographical coordinates in degrees, minutes and seconds of the position of the transmitting station; and
6) remarks.

If the operating authority of the facility is other than the designated governmental agency, the name of the operatingauthority must be indicated in the remarks column. Facility coverage must be indicated in the remarks column.

ENR 4.3 Global Navigation Satellite System (GNSS)

A list and description of elements of the Global Navigation Satellite System (GNSS) providing the navigation serviceestablished for en-route purposes and arranged alphabetically by name of the element, including:

1) the name of the GNSS element, (GPS, GLONASS, EGNOS, MSAS, WAAS, etc.);
2) frequency(ies), as appropriate;
3) geographical coordinates in degrees, minutes and seconds of the nominal service area and coverage area; and
4) remarks.

If the operating authority of the facility is other than the designated governmental agency, the name of the operatingauthority must be indicated in the remarks column.

ENR 4.4 Name-code designators for significant points

#AIP-DS# A list of alphabetically arranged name-code designators (five-letter pronounceable “name-code”) establishedfor significant points at positions not marked by the site of radio navigation aids, including:

1) name-code designator;
2) geographical coordinates in degrees, minutes and seconds of the position;
3) reference to ATS or other routes where the point is located; and
4) remarks, including supplementary definition of positions where required.

ENR 4.5 Aeronautical ground lights — en-route

#AIP-DS# A list of aeronautical ground lights and other light beacons designating geographical positions which areselected by the State as being significant, including:

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

#AIP-DS# Description, supplemented by graphic portrayal where appropriate, of prohibited, restricted and danger areastogether with information regarding their establishment and activation, including:

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

2) upper and lower limits; and
3) remarks, including time of activity.

Type of restriction or nature of hazard and risk of interception in the event of penetration must be indicated in theremarks column.

ENR 5.2 Military exercise and training areasand Air Defence Identification Zone (ADIZ)

#AIP-DS# Description, supplemented by graphic portrayal where appropriate, of established military training areas andmilitary exercises taking place at regular intervals, and established Air Defence Identification Zone (ADIZ), including:

1) geographical coordinates of the lateral limits in degrees, minutes and seconds if inside and in degrees and minutesif outside control area/control zone boundaries;
2) upper and lower limits and system and means of activation announcements together with information pertinent tocivil flights and applicable ADIZ procedures; and
3) remarks, including time of activity and risk of interception in the event of penetration of ADIZ.

ENR 5.3 Other activities of a dangerousnature and other potential hazards

ENR 5.3.1 Other activities of a dangerous nature

#AIP-DS# Description, supplemented by charts where appropriate, of activities that constitute a specific or obviousdanger to aircraft operation and could affect flights, including:

1) geographical coordinates in degrees and minutes of centre of area and range of influence;
2) vertical limits;
3) advisory measures;
4) authority responsible for the provision of information; and
5) remarks, including time of activity.

ENR 5.3.2 Other potential hazards

#AIP-DS# Description, supplemented by charts where appropriate, of other potential hazards that could affect flights(active volcanoes, nuclear power stations, etc.), including:

1) geographical coordinates in degrees and minutes of location of potential hazard;
2) vertical limits;
3) advisory measures;
4) authority responsible for the provision of information; and
5) remarks.

ENR 5.4 Air navigation obstacles

#OBS-DS# A list of obstacles affecting air navigation in Area 1 (the entire State territory), including:

1) obstacle identification or designation;
2) type of obstacle;
3) obstacle position, represented by geographical coordinates in degrees, minutes and seconds;
4) obstacle elevation and height to the nearest metre or foot; and
5) type and colour of obstacle lighting (if any).

Note 1: An obstacle whose height above the ground is 100 m and higher is considered an obstacle for Area 1.

Note 2: Specifications concerning the determination and reporting (accuracy of field work and data integrity) ofpositions (latitude and longitude) and elevations/heights for obstacles in Area 1 are given in Appendix 1.

ENR 5.5 Aerial sporting and recreational activities

#AIP-DS# Brief description, supplemented by graphic portrayal where appropriate, of intensive aerial sporting andrecreational activities together with conditions under which they are carried out, including:

1) designation and geographical coordinates of the lateral limits in degrees, minutes and seconds if inside and indegrees and minutes if outside control area/control zone boundaries;
2) vertical limits;
3) operator/user telephone number; and
4) remarks, including time of activity.

Note: This subsection may be subdivided into different sections for each different category of activity, giving theindicated details in each case.

ENR 5.6 Bird migration and areas with sensitive fauna

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

ENR 6. EN-ROUTE CHARTS

The requirement is for the En-route Chart — ICAO and index charts to be included in this section.

PART 3 — AERODROMES (AD)

If 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 s, 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 0.1 Table of contents to Part 3

A list of sections and subsections contained in Part 3 — Aerodromes (AD).

Note: Subsections may be listed alphabetically.

AD 1. AERODROMES/HELIPORTS — INTRODUCTION

AD 1.1 Aerodrome/heliport availability and conditions of use

AD 1.1.1 General conditions

Brief description of the State’s designated authority responsible for aerodromes and heliports, including:

1) the general conditions under which aerodromes/heliports and associated facilities are available for use; and
2) a statement concerning the ICAO documents on which the services are based and a reference to the AIP locationwhere differences, if any, are listed.

AD 1.1.2 Use of military air bases

Regulations and procedures, if any, concerning civil use of military air bases.

AD 1.1.3 Low visibility procedures

The general conditions under which the low visibility procedures applicable to Cat II/III operations at aerodromes, if any, are applied.

AD 1.1.4 Aerodrome operating minima

Details of aerodrome operating minima applied by the State.

AD 1.1.5 Other information

If applicable, other information of a similar nature.

AD 1.2 Rescue and firefighting services and snow plan

AD 1.2.1 Rescue and firefighting services

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 firefighting categories established by a State.

AD 1.2.2 Snow plan

Brief description of general snow plan considerations for aerodromes/heliports available for public use at which snow conditions are normally liable to occur, including:

1) organization of the winter service;
2) surveillance of movement areas;
3) measuring methods and measurements taken;
4) actions taken to maintain the usability of movement areas;
5) system and means of reporting;
6) the cases of runway closure; and
7) distribution of information about snow conditions.

Note: Where different snow plan considerations apply at aerodromes/heliports, this subsection may besubdivided accordingly.

AD 1.3 Index to aerodromes and heliports

A list, supplemented by graphic portrayal, of aerodromes and heliports within a State, including:

1) aerodrome/heliport name and ICAO location indicator;
2) type of traffic permitted to use the aerodrome/heliport (international/national, IFR/VFR, scheduled/non-scheduled,general aviation, military and other); and
3) reference to AIP, Part 3 subsection in which aerodrome/heliport details are presented.

AD 1.4 Grouping of aerodromes/heliports

Brief description of the criteria applied by the State in grouping aerodromes/heliports for production/distribution/provision of information purposes (international/national; primary/secondary; major/other; civil/military; etc.).

AD 1.5 Status of certification of aerodromes

A list of aerodromes in the State, indicating the status of certification, including:

1) aerodrome name and ICAO location indicator;
2) date and, if applicable, validity of certification; and
3) remarks, if any.

AD 2. AERODROMES

*Note 1: OE** is to be replaced by the relevant ICAO location indicator.*

Note 2: Specified subsections may be developed for water aerodromes.

OE** AD 2.1 Aerodrome location indicator and name

The requirement is for the ICAO location indicator allocated to the aerodrome and the name of aerodrome. 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

The requirement is for aerodrome geographical and administrative data, including:

1) aerodrome reference point (geographical coordinates in degrees, minutes and seconds) and its site;
2) direction and distance of aerodrome reference point from centre of the city or town which the aerodrome serves;
3) aerodrome elevation to the nearest metre or foot, reference temperature and mean low temperature;
4) where appropriate, geoid undulation at the aerodrome elevation position to the nearest metre or foot;
5) magnetic variation to the nearest degree, date of information and annual change;
6) name of aerodrome operator, address, telephone and telefax numbers, e-mail address, AFS address and, if available,website address;
7) types of traffic permitted to use the aerodrome (IFR/VFR); and
8) remarks.

OE** AD 2.3 Operational hours

Detailed description of the hours of operation of services at the aerodrome, including:

1) aerodrome operator;
2) customs and immigration;
3) health and sanitation;
4) AIS briefing office;
5) ATS reporting office (ARO);
6) MET briefing office;
7) air traffic service;
8) fuelling;
9) handling;
10) security;
11) de-icing; and
12) remarks.

OE** AD 2.4 Handling services and facilities

Detailed description of the handling services and facilities available at the aerodrome, including:

1) cargo-handling facilities;
2) fuel and oil types;
3) fuelling facilities and capacity;
4) de-icing facilities;
5) hangar space for visiting aircraft;
6) repair facilities for visiting aircraft; and
7) remarks.

OE** AD 2.5 Passenger facilities

Passenger facilities available at the aerodrome, provided as a brief description or a reference to other

informationsources such as a website, including:

1) hotel(s) at or in the vicinity of aerodrome;
2) restaurant(s) at or in the vicinity of aerodrome;
3) transportation possibilities;
4) medical facilities;
5) bank and post office at or in the vicinity of aerodrome;
6) tourist office; and
7) remarks.

OE AD 2.6 Rescue and firefighting services**

Detailed description of the rescue and firefighting services and equipment available at the aerodrome, including:

1) aerodrome category for firefighting;
2) rescue equipment;
3) capability for removal of disabled aircraft; and
4) remarks.

OE AD 2.7 Seasonal availability — clearing**

Detailed description of the equipment and operational priorities established for the clearance of aerodrome movementareas, including:

1) type(s) of clearing equipment;
2) clearance priorities; and
3) remarks.

OE AD 2.8 Aprons, taxiways and check locations/positions data**

Details related to the physical characteristics of aprons, taxiways and locations/positions of designated checkpoints,including:

1) designation, surface and strength (PCR) of aprons;
2) designation, width, surface and strength (PCR) of taxiways;
3) location and elevation to the nearest metre or foot of altimeter checkpoints;
4) location of VOR checkpoints;
5) position of INS checkpoints in degrees, minutes, seconds and hundredths of seconds; and
6) remarks.

If check locations/positions are presented on an aerodrome chart, a note to that effect must be provided under thissubsection.

OE 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:

1) use of aircraft stand identification signs, taxiway guide lines and visual docking/parking guidance system ataircraft stands;
2) runway and taxiway markings and lights;
3) stop bars and runway guard lights (if any);

4) other runway protection measures; and
5) remarks.

OE AD 2.10 Aerodrome obstacles**

#OBS-DS# Detailed description of obstacles, including:

1) obstacles in Area 2:
   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); and
   f) NIL indication, if appropriate.

Note 1: Section 2 / SUBPART E provides a description of Area 2 while Appendix 8, Figure A8-2 of this documentcontains graphical illustrations of obstacle data collection surfaces and criteria used to identify obstacles in Area 2.

Note 2: Specifications concerning the determination and reporting (accuracy of field work and data integrity) ofpositions (latitude and longitude) and elevations for obstacles in Area 2 are given in Appendix 1.

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 if provided:

   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 tenth of a metre or tenth of a 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 as a digital data set, and a reference toGEN 3.1.6; and

   g) NIL indication, if appropriate.

Note 1: Section 2 / SUBPART E, provides a description of Area 3 while Appendix 8, Figure A8-3 of this documentcontains graphical illustrations of obstacle data collection surfaces and criteria used to identify obstacles in Area 3.

Note 2: Specifications concerning the determination and reporting (accuracy of field work and data integrity) ofpositions (latitude and longitude) and elevations for obstacles in Area 3 are given in Appendix 1.

OE** AD 2.11 Meteorological information provided

Detailed description of meteorological information provided at the aerodrome and an indication of whichmeteorological office is responsible for the service enumerated, including:

1) name of the associated meteorological office;
2) hours of service and, where applicable, the designation of the responsible meteorological office outside these hours;
3) office responsible for preparation of TAFs and periods of validity and interval of issuance of the forecasts;
4) availability of the trend forecasts for the aerodrome, and interval of issuance;
5) information on how briefing and/or consultation is provided;
6) types of flight documentation supplied and language(s) used in flight documentation;
7) charts and other information displayed or available for briefing or consultation;
8) supplementary equipment available for providing information on meteorological conditions, e.g. weather radar andreceiver for satellite images;
9) the air traffic services unit(s) provided with meteorological information; and
10) additional information (e.g. concerning any limitation of service).

OE** AD 2.12 Runway physical characteristics

Detailed description of runway physical characteristics, for each runway, including:

1) designations;
2) true bearings to one-hundredth of a degree;
3) dimensions of runways to the nearest metre or foot;
4) strength of pavement (PCR and associated data) and surface of each runway andassociated stopways;
5) geographical coordinates in degrees, minutes, seconds and hundredths of seconds for each threshold and runwayend and, where appropriate, geoid undulation of:
   — thresholds of a non-precision approach runway to the nearest metre or foot; and
   — thresholds of a precision approach runway to the nearest tenth of a metre or tenth of a foot;
6) elevations of:
   — thresholds of a non-precision approach runway to the nearest metre or foot; and
   — thresholds and the highest elevation of the touchdown zone of a precision approach runway to the nearesttenth of a metre or tenth of a foot;
7) slope of each runway and associated stopways;
8) dimensions of stopway (if any) to the nearest metre or foot;
9) dimensions of clearway (if any) to the nearest metre or foot;
10) dimensions of strips;
11) dimensions of runway end safety areas;
12) location (which runway end) and description of arresting system (if any);
13) the existence of an obstacle-free zone; and
14) remarks.

OE** AD 2.13 Declared distances

Detailed description of declared distances to the nearest metre or foot for each direction of each runway, including:

1) runway designator;
2) take-off run available;
3) take-off distance available, and if applicable, alternative reduced declared distances;

4) accelerate-stop distance available;
5) landing distance available; and
6) remarks, including runway entry or start point where alternative reduced declared distances have been declared.

If a runway direction cannot be used for take-off or landing, or both, because it is operationally forbidden, then this mustbe declared and the words “not usable” or the abbreviation “NU” entered (Annex 14, Volume I, Attachment A, Section 3).

OE AD 2.14 Approach and runway lighting**

Detailed description of approach and runway lighting, including:

1) runway designator;
2) type, length and intensity of approach lighting system;
3) runway threshold lights, colour and wing bars;
4) type of visual approach slope indicator system;
5) length of runway touchdown zone lights;
6) length, spacing, colour and intensity of runway centre line lights;
7) length, spacing, colour and intensity of runway edge lights;
8) colour of runway end lights and wing bars;
9) length and colour of stopway lights; and
10) remarks.

OE AD 2.15 Other lighting and secondary power supply**

Description of other lighting and secondary power supply, including:

1) location, characteristics and hours of operation of aerodrome beacon/identification beacon (if any);
2) location and lighting (if any) of anemometer/landing direction indicator;
3) taxiway edge and taxiway centre line lights;
4) secondary power supply including switch-over time; and
5) remarks.

OE AD 2.16 Helicopter landing area**

Detailed description of helicopter landing area provided at the aerodrome, including:

1) geographical coordinates in degrees, minutes, seconds and hundredths of seconds and, where appropriate, geoid undulation of the geometric centre of Touchdown and Lift-Off (TLOF) or of each threshold of Final Approach and Take-Off (FATO) area:
   — for non-precision approaches, to the nearest metre or foot; and
   — for precision approaches, to the nearest tenth of a metre or tenth of a foot;
2) TLOF and/or FATO area elevation:
   — for non-precision approaches, to the nearest metre or foot; and
   — for precision approaches, to the nearest tenth of a metre or tenth of a foot;
3) TLOF and FATO area dimensions to the nearest metre or foot, surface type, bearing strength and marking;
4) true bearings to one-hundredth of a degree of FATO;
5) declared distances available, to the nearest metre or foot;
6) approach and FATO lighting; and
7) remarks.

OE** AD 2.17 Air traffic services airspace

#AIP-DS# Detailed description of Air Traffic Services (ATS) airspace organized at the aerodrome, including:

1) airspace designation and geographical coordinates in degrees, minutes and seconds of the lateral limits;
2) vertical limits;
3) airspace classification;
4) call sign and language(s) of the ATS unit providing service;
5) transition altitude;
6) hours of applicability; and
7) remarks.

OE** AD 2.18 Air traffic services communication facilities

Detailed description of ATS communication facilities established at the aerodrome, including:

1) service designation;
2) call sign;
3) channel(s);
4) SATVOICE number(s), if available;
5) logon address, as appropriate;
6) hours of operation; and
7) remarks.

OE** AD 2.19 Radio navigation and landing aids

#AIP-DS# Detailed description of radio navigation and landing aids associated with the instrument approach and the terminal area procedures at the aerodrome, including:

1)
   a) type of aids;
   b) magnetic variation to the nearest degree, as appropriate;
   c) type of supported operation for ILS/MLS/GLS, basic GNSS and SBAS;
   d) classification for ILS;
   e) facility classification and approach facility designation(s) for GBAS; and
   f) for VOR/ILS/MLS also station declination to the nearest degree used for technical line-up of the aid;
2) identification, if required;
3) frequency(ies), channel number(s), service provider and Reference Path Identifier(s) (RPI), as appropriate;
4) hours of operation, as appropriate;
5) geographical coordinates in degrees, minutes, seconds and tenths of seconds of the position of the transmitting antenna, as appropriate;
6) elevation of the transmitting antenna of DME to the nearest 30 m (100 ft) and of DME/P to the nearest 3 m (10 ft); elevation of GBAS reference point to the nearest metre or foot, and the ellipsoid height of the point to the nearest metre or foot. For SBAS, the ellipsoid height of the Landing Threshold Point (LTP) or the Fictitious Threshold Point (FTP) to the nearest metre or foot;
7) service volume radius from the GBAS reference point to the nearest kilometre or nautical mile; and
8) remarks.

When the same aid is used for both en-route and aerodrome purposes, a description must also be given in section ENR 4. If the GBAS serves more than one aerodrome, description of the aid must be provided under each aerodrome. Ifthe operating authority of the facility is other than the designated governmental agency, the name of the operating authority must be indicated in the remarks column. Facility coverage must be indicated in the remarks column.

OE** AD 2.20 Local aerodrome regulations

Detailed description of regulations applicable to the use of the aerodrome, including the acceptability of training flights,non-radio and microlight aircraft and similar, and to ground manoeuvring and parking but excluding flight procedures.

OE** AD 2.21 Noise abatement procedures

Detailed description of noise abatement procedures established at the aerodrome.

OE** AD 2.22 Flight procedures

Detailed description of the conditions and flight procedures, including radar and/or ADS-B procedures, established on the basis of airspace organization at the aerodrome. When established, detailed description of the low visibility procedures at the aerodrome, including:

1) runway(s) and associated equipment authorized for use under low visibility procedures;
2) defined meteorological conditions under which initiation, use and termination of low visibility procedures wouldbe made;
3) description of ground marking/lighting for use under low visibility procedures; and
4) remarks.

OE** AD 2.23 Additional information

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

OE** AD 2.24 Charts related to an aerodrome

The requirement is for charts related to an aerodrome to be included in the following order:

1) Aerodrome/Heliport Chart — ICAO;
2) Aircraft Parking/Docking Chart — ICAO;
3) Aerodrome Ground Movement Chart — ICAO;
4) Aerodrome Obstacle Chart — ICAO Type A (for each runway);
5) Aerodrome Obstacle Chart — ICAO Type B (when available);
6) Aerodrome Terrain and Obstacle Chart — ICAO (Electronic);
7) Precision Approach Terrain Chart — ICAO (precision approach Cat II and III runways);
8) Area Chart — ICAO (departure and transit routes);
9) Standard Departure Chart — Instrument — ICAO;
10) Area Chart — ICAO (arrival and transit routes);
11) Standard Arrival Chart — Instrument — ICAO;
12) ATC Surveillance Minimum Altitude Chart — ICAO;
13) Instrument Approach Chart — ICAO (for each runway and procedure type);
14) Visual Approach Chart — ICAO; and
15) bird concentrations in the vicinity of the aerodrome.

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

OE** *AD 2.25* Visual Segment Surface (VSS) penetration

Visual Segment Surface (VSS) penetration, including procedure and procedure minima affected.

Note: Criteria related to the VSS are contained in ICAO PANS-OPS Volume II, Part I, Section 4, Chapter 5,paragraph 5.4.6.

AD 3. HELIPORTS

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

*Note1: OE** is to be replaced by the relevant ICAO location indicator.*

Note 2: Specified subsections may be developed for water heliports.

OE** AD 3.1 Heliport location indicator and name

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

OE** AD 3.2 Heliport geographical and administrative data

The requirement is for heliport geographical and administrative data, including:

1) heliport reference point (geographical coordinates in degrees, minutes and seconds) and its site;
2) direction and distance of heliport reference point from centre of the city or town which the heliport serves;
3) heliport elevation to the nearest metre or foot, reference temperature and mean low temperature;
4) where appropriate, geoid undulation at the heliport elevation position to the nearest metre or foot;
5) magnetic variation to the nearest degree, date of information and annual change;
6) name of heliport operator, address, telephone and telefax numbers, e-mail address, AFS address and, if available,website address;
7) types of traffic permitted to use the heliport (IFR/VFR); and
8) remarks.

OE** AD 3.3 Operational hours

Detailed description of the hours of operation of services at the heliport, including:

1) heliport operator;
2) customs and immigration;
3) health and sanitation;

4) AIS briefing office;
5) ATS reporting office (ARO);
6) MET briefing office;
7) air traffic service;
8) fuelling;
9) handling;
10) security;
11) de-icing; and
12) remarks.

OE** AD 3.4 Handling services and facilities

Detailed description of the handling services and facilities available at the heliport, including:

1) cargo-handling facilities;

2) fuel and oil types;
3) fuelling facilities and capacity;
4) de-icing facilities;
5) hangar space for visiting helicopters;
6) repair facilities for visiting helicopters; and
7) remarks.

OE AD 3.5 Passenger facilities**

Passenger facilities available at the heliport, provided as a brief description or as a reference to other informationsources such as a website, including:

1) hotel(s) at or in the vicinity of the heliport;
2) restaurant(s) at or in the vicinity of the heliport;
3) transportation possibilities;
4) medical facilities;
5) bank and post office at or in the vicinity of the heliport;
6) tourist office; and
7) remarks.

OE AD 3.6 Rescue and firefighting services**

Detailed description of the rescue and firefighting services and equipment available at the heliport, including:

1) heliport category for firefighting;
2) rescue equipment;
3) capability for removal of disabled helicopters; and
4) remarks.

OE AD 3.7 Seasonal availability — clearing**

Detailed description of the equipment and operational priorities established for the clearance of heliport movementareas, including:

1) type(s) of clearing equipment;
2) clearance priorities; and
3) remarks.

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

Details related to the physical characteristics of aprons, taxiways and locations/positions of designated checkpoints,including:

1) designation, surface and strength of aprons, helicopter stands;
2) designation, width and surface type of helicopter ground taxiways;
3) width and designation of helicopter air taxiway and air transit route;
4) location and elevation to the nearest metre or foot of altimeter checkpoints;
5) location of VOR checkpoints;
6) position of INS checkpoints in degrees, minutes, seconds and hundredths of seconds; and
7) remarks.

If check locations/positions are presented on a heliport chart, a note to that effect must be provided

under thissubsection.

OE** AD 3.9 Markings and markers

Brief description of final approach and take-off area and taxiway markings and markers, including:

1) final approach and take-off markings;
2) taxiway markings, air taxiway markers and air transit route markers; and
3) remarks.

OE** AD 3.10 Heliport obstacles

#OBS-DS# Detailed description of obstacles, including:

1) obstacle identification or designation;
2) type of obstacle;
3) obstacle position, represented by geographical coordinates in degrees, minutes, seconds and tenths of seconds;
4) obstacle elevation and height to the nearest metre or foot;
5) obstacle marking, and type and colour of obstacle lighting (if any); and
6) NIL indication, if appropriate.

OE** AD 3.11 Meteorological information provided

Detailed description of meteorological information provided at the heliport and an indication of which meteorologicaloffice is responsible for the service enumerated, including:

1) name of the associated meteorological office;
2) hours of service and, where applicable, the designation of the responsible meteorological office outside these hours;
3) office responsible for preparation of TAFs, and periods of validity of the forecasts;
4) availability of the trend forecasts for the heliport, and interval of issuance;
5) information on how briefing and/or consultation is provided;
6) type of flight documentation supplied and language(s) used in flight documentation;
7) charts and other information displayed or available for briefing or consultation;
8) supplementary equipment available for providing information on meteorological conditions, e.g. weather radar andreceiver for satellite images;
9) the ATS unit(s) provided with meteorological information; and
10) additional information (e.g. concerning any limitation of service).

OE** AD 3.12 Heliport data

Detailed description of heliport dimensions and related information, including:

1) heliport type (surface-level, elevated or helideck);
2) Touchdown and Lift-Off (TLOF) area dimensions to the nearest metre or foot;
3) true bearings to one-hundredth of a degree of Final Approach and Take-Off (FATO) area;
4) dimensions to the nearest metre or foot of FATO, and surface type;
5) surface and bearing strength in tonnes (1 000 kg) of TLOF;
6) geographical coordinates in degrees, minutes, seconds and hundredths of seconds and, where appropriate, geoidundulation of the geometric centre of TLOF or of each threshold of FATO:
   — for non-precision approaches, to the nearest metre or foot; and
   — for precision approaches, to the nearest tenth of a metre or tenth of a foot;

7) TLOF and/or FATO slope and elevation:
   — for non-precision approaches, to the nearest metre or foot; and
   — for precision approaches, to the nearest tenth of a metre or tenth of a foot;
8) dimensions of safety area;
9) dimensions, to the nearest metre or foot, of helicopter clearway;
10) the existence of an obstacle-free sector; and
11) remarks.

OE AD 3.13 Declared distances**

Detailed description of declared distances to the nearest metre or foot, where relevant for a heliport, including:

1) take-off distance available, and if applicable, alternative reduced declared distances;
2) rejected take-off distance available;
3) landing distance available; and
4) remarks, including entry or start point where alternative reduced declared distances have been declared.

OE AD 3.14 Approach and FATO lighting**

Detailed description of approach and FATO lighting, including:

1) type, length and intensity of approach lighting system;
2) type of visual approach slope indicator system;
3) characteristics and location of FATO area lights;
4) characteristics and location of aiming point lights;
5) characteristics and location of TLOF lighting system; and
6) remarks.

OE AD 3.15 Other lighting and secondary power supply**

Description of other lighting and secondary power supply, including:

1) location, characteristics and hours of operation of heliport beacon;
2) location and lighting of Wind Direction Indicator (WDI);
3) taxiway edge and taxiway centre line lights;
4) secondary power supply including switch-over time; and
5) remarks.

OE AD 3.16 Air traffic services airspace**

#AIP-DS# Detailed description of Air Traffic Services (ATS) airspace organized at the heliport, including:

1) airspace designation and geographical coordinates in degrees, minutes and seconds of the lateral limits;
2) vertical limits;
3) airspace classification;
4) call sign and language(s) of ATS unit providing service;
5) transition altitude;
6) hours of applicability; and
7) remarks.

OE AD 3.17 Air traffic services communication facilities**

Detailed description of ATS communication facilities established at the heliport, including:

1) service designation;
2) call sign;
3) channel(s);
4) SATVOICE number(s), if available;
5) logon address, as appropriate;
6) hours of operation; and
7) remarks.

OE AD 3.18 Radio navigation and landing aids**

#AIP-DS# Detailed description of radio navigation and landing aids associated with the instrument approach and the terminal area procedures at the heliport, including:

1) type of aids, magnetic variation to the nearest degree, as appropriate, and type of supported operation for ILS/MLS,basic GNSS, SBAS and GBAS, and for VOR/ILS/MLS also station declination to the nearest degree used for technical line-up of the aid;
2) identification, if required;
3) frequency(ies), channel number(s), service provider and Reference Path Identifier(s) (RPI), as appropriate;
4) hours of operation, as appropriate;
5) geographical coordinates in degrees, minutes, seconds and tenths of seconds of the position of the transmitting antenna, as appropriate;
6) elevation of the transmitting antenna of DME to the nearest 30 m (100 ft) and of DME/P to the nearest 3 m (10 ft), elevation of GBAS reference point to the nearest metre or foot, and the ellipsoid height of the point to the nearest metre or foot. For SBAS, the ellipsoid height of the Landing Threshold Point (LTP) or the Fictitious Threshold Point (FTP) to the nearest metre or foot;
7) service volume radius from the GBAS reference point to the nearest kilometre or nautical mile; and
8) remarks.

When the same aid is used for both en-route and heliport purposes, a description must also be given in section ENR 4.If the GBAS serves more than one heliport, description of the aid must be provided under each heliport. If the operatingauthority of the facility is other than the designated governmental agency, the name of the operating authority must be indicated in the remarks column. Facility coverage must be indicated in the remarks column.

OE AD 3.19 Local heliport regulations**

Detailed description of regulations applicable to the use of the heliport, including the acceptability of training flights, non-radio and microlight aircraft and similar, and to ground manoeuvring and parking but excluding flight procedures.

OE AD 3.20 Noise abatement procedures**

Detailed description of noise abatement procedures established at the heliport.

OE AD 3.21 Flight procedures**

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. When established, detailed

description of the low visibilityprocedures at the heliport, including:

1) Touchdown and Lift-Off (TLOF) area(s) and associated equipment authorized for use under low visibility procedures;

2) defined meteorological conditions under which initiation, use and termination of low visibility procedures wouldbe made;
3) description of ground marking/lighting for use under low visibility procedures; and
4) remarks.

OE 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.

OE AD 3.23 Charts related to a heliport**

The requirement is for charts related to a heliport to be included in the following order:

1) Aerodrome/Heliport Chart — ICAO;
2) Area Chart — ICAO (departure and transit routes);
3) Standard Departure Chart — Instrument — ICAO;
4) Area Chart — ICAO (arrival and transit routes);
5) Standard Arrival Chart — Instrument — ICAO;
6) ATC Surveillance Minimum Altitude Chart — ICAO;
7) Instrument Approach Chart — ICAO (for each procedure type);
8) Visual Approach Chart — ICAO; and
9) bird concentrations in the vicinity of heliport.

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

Appendix 3 to GACAR Part 175 – NOTAM FORMAT

(See § 175.109 (b))

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 NOTAM 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, airspaceor 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 NOTAM FORMAT

Note: For NOTAM examples see the Aeronautical Information Services Manual (ICAO Doc 8126) and the Proceduresfor Air Navigation Services — ICAO Abbreviations and Codes (PANS-ABC, ICAO Doc 8400).

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, must be transmitted unless there is no entry to be made against a particular identifier.

2. NOTAM numbering

Each NOTAM must 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 must start on 1 January with number 0001.

3. Qualifiers (Item Q)

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

1) FIR

a) If the subject of the information is located geographically within one FIR, the ICAO location indicator must bethat of the FIR concerned. When an aerodrome is situated within the overlying FIR of another State, the first field of Item Q) must contain the code for that overlying FIR (e.g. Q) LFRR/…A) EGJJ);

or,

if the subject of the information is located geographically within more than one FIR, the FIR field must be composed of the ICAO nationality letters of the State originating the NOTAM followed by "XX". (The location indicator of the overlying UIR must not be used). The ICAO location indicators of the FIRs concerned must then be listed in Item A) or indicator of State or non-governmental agency which is responsible for provision of a navigation service in more than one State.

b) If one State issues a NOTAM affecting FIRs in a group of States, the first two letters of the ICAO location indicator of the issuing State plus "XX" must be included. The location indicators of the FIRs concerned must then be listed in Item A) or indicator of State or non-governmental agency which is responsible for provisionof a navigation service in more than one State.

2) 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 (ICAO Doc 8400).For combinations of second and third, and fourth and fifth letters, refer to the NOTAM Selection Criteria containedin ICAO Doc 8126 or insert one of the following combinations, as appropriate:

a) If the subject is not listed in the NOTAM Code (PANS-ABC, ICAO Doc 8400) or in the NOTAM Selection Criteria (ICAO Doc 8126), insert "XX" as the second and third letters ; If subject is "XX",

use "XX" also for condition (e.g. QXXXX).

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

c) When a NOTAM containing operationally significant information is issued in accordance with § 175.133 (a), and when it is used to announce the existence of AIRAC AIP Amendments or Supplements, insert "TT"as the fourth and fifth letters of the NOTAM Code;

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

e) The following fourth and fifth letters of the NOTAM Code must be used in NOTAM cancellations:

AK = RESUMED NORMAL OPERATION
AL = OPERATIVE (OR RE-OPERATIVE) SUBJECT TO PREVIOUSLY PUBLISHED LIMITATIONS/CONDITIONS
AO = OPERATIONAL
CC = COMPLETED
CN = CANCELLED
HV = WORK COMPLETED
XX = PLAIN LANGUAGE

Note 1: As Q - - AO = Operational is used for NOTAM cancellation, NOTAM promulgating new equipmentor services use the following fourth and fifth letters Q - - CS = Installed.

Note 2: Q - - CN = CANCELLED must be used to cancel planned activities, e.g. navigation warnings; Q - -HV = WORK COMPLETED is used to cancel work in progress.

3) 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 ICAO Doc 8126.

4) PURPOSE

N = NOTAM selected for the immediate attention of flight crew members
B = NOTAM of operational significance selected for PIB entry
O = NOTAM concerning flight operations
M = Miscellaneous NOTAM; not subject for a briefing, but 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 ICAO Doc 8126.

5) SCOPE

A = Aerodrome
E = En-route
W = Nav Warning

K = NOTAM is a checklist

If the subject is qualified AE, the aerodrome location indicator must be reported in Item A).

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

6) and 7) LOWER/UPPER LIMITS

Lower and upper limits must only be expressed in flight levels (FL) and must express the actual vertical limits of the area of influence without the addition of buffers. In the case of navigation warnings and airspace restrictions, values entered must be consistent with those provided under Items F) and G).

If the subject does not contain specific height information, insert "000" for LOWER and "999" for UPPER as default values.

8) 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/UIR or more than one FIR/UIR,enter the default value "999" for radius.

4. Item A)

Insert the ICAO location indicator as contained in Doc 7910 of the aerodrome or FIR in which the facility, airspace, or condition being reported on is located. More than one FIR/UIR 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 GNSS element outage(e.g. KNMH for a GPS satellite outage).

5. Item B)

For date-time group use a ten-figure group, giving year, month, day, hours and minutes in UTC. This entry is 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 must be indicated by "0000".

6. Item C)

With the exception of NOTAMC, a date-time group (a ten-figure group giving year, month, day, hours and minutes in UTC) indicating duration of information must be used unless the information is of a permanent nature in which case theabbreviation "PERM" is inserted instead. The end of a day must be indicated by "2359" (i.e. do not use "2400"). If the information on timing is uncertain, the approximate duration must be indicated using a date-time group followed by the abbreviation "EST". Any NOTAM which includes an

"EST" must be cancelled or replaced before the date-time specified in Item C).

7. Item D)

If 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). If Item D) exceeds 200 characters, consideration must be given to providing such information in a separate, consecutive NOTAM.

Note: Guidance concerning a harmonized definition of Item D) content is provided in ICAO 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 must be included for those parts expressed in plain language. This entry must be clear and concise in order to provide a suitable PIB entry. In the case of NOTAMC, a subject reference and status message must 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 must be used in Item F) to designate ground and surface respectively. The abbreviation UNL must be used in Item G) to designate unlimited.

Appendix 4 to GACAR Part 175 – SNOWTAM FORMAT

(See § 175.109 (e))

(COM heading)	(PRIORITY INDICATOR)	(ADDRESSES)	<≡
	(DATE AND TIME OF FILING)	(ORIGINATOR'S INDICATOR)	<≡
(Abbreviated heading)	(SWAA* SERIAL NUMBER) S W * *	(LOCATION INDICATOR)	DATE/TIME OF ASSESMENT (OPTIONAL GROUP) <≡(

SNOWTAM →	(Serial number) <≡

Aeroplane performance calculation section			
(AERODROME LOCATION INDICATOR)	M	A)	<≡
(DATE/TIME OF ASSESSMENT *(Time of completion of assessment in UTC)*)	M	B)	→
(LOWER RUNWAY DESIGNATION NUMBER)	M	C)	→
(RUNWAY CONDITION CODE (RWYCC) ON EACH RUNWAY THIRD) *(From Runway Condition Assessment Matrix (RCAM) 0, 1, 2, 3, 4, 5 or 6)*	M	D)	/ / →
(PER CENT COVERAGE CONTAMINANT FOR EACH RUNWAY THIRD)	C	E)	/ / →
(DEPTH *(mm)* OF LOOSE CONTAMINANT FOR EACH RUNWAY THIRD)	C	F)	/ / →
(CONDITION DESCRIPTION OVER TOTAL RUNWAY LENGTH) *(Observed on each runway third, starting from threshold having the lower runway designation number)* COMPACTED SNOW DRY DRY SNOW DRY SNOW ON TOP OF COMPACTED SNOW DRY SNOW ON TOP OF ICE FROST ICE SLUSH STANDING WATER WATER ON TOP OF COMPACTED SNOW WET WET ICE WET SNOW WET SNOW ON TOP OF COMPACTED SNOW WET SNOW ON TOP OF ICE	M	G)	/ / →
(WIDTH OF RUNWAY TO WHICH THE RUNWAY CONDITION CODES APPLY, IF LESS THANPUBLISHED WIDTH)	O	H)	<≡≡
Situational awareness section			
(REDUCED RUNWAY LENGTH, IF LESS THAN PUBLISHED LENGTH *(m)*)	O	I)	→
(DRIFTING SNOW ON THE RUNWAY)	O	J)	→
(LOOSE SAND ON THE RUNWAY)	O	K)	→
(CHEMICAL TREATMENT ON THE RUNWAY)	O	L)	→
(SNOWBANKS ON THE RUNWAY) *(If present, distance from runway centre line (m) followed by "L", "R" or "LR" as applicable)*	O	M)	→
(SNOWBANKS ON A TAXIWAY)	O	N)	→
(SNOWBANKS ADJACENT TO THE RUNWAY)	O	O)	→
(TAXIWAY CONDITIONS)	O	P)	→
(APRON CONDITIONS)	O	R)	→
(MEASURED FRICTION COEFFICIENT)	O	S)	→
(PLAIN-LANGUAGE REMARKS)	O	T)	)

NOTES:
1. *Enter ICAO nationality letters as given in ICAO Doc 7910, Part 2 or otherwise applicable aerodrome identifier.
2. Information on other runways, repeat from B to H.
3. Information in the situational awareness section repeated for each runway, taxiway and apron. Repeat as applicable when reported.
4. Words in brackets ( ) not to be transmitted.
5. For letters A) to T) refer to the *Instructions for the completion of the SNOWTAM Format*, paragraph 1, item b).

SIGNATURE OF ORIGINATOR *(not for transmission)*

INSTRUCTIONS FOR THE COMPLETION OF THE SNOWTAM FORMAT

Note: Origin of data, assessment process and the procedures linked to the surface conditions reporting systemare prescribed in the Procedures for Air Navigation Services — Aerodromes *(PANS-Aerodromes, ICAO Doc 9981).*

1. General

a) When reporting on more than one runway, repeat Items B to H (aeroplane performance calculation section).
b) The letters used to indicate items are only used for reference purpose and must not be included in the messages. The letters, M (mandatory), C (conditional) and O (optional) mark the usage and information and must be included as explained below.
c) Metric units must be used and the unit of measurement not reported.
d) The maximum validity of SNOWTAM is 8 hours. New SNOWTAM must be issued whenever a new runway condition report is received.
e) A SNOWTAM cancels the previous SNOWTAM.
f) The abbreviated heading "TTAAiiii CCCC MMDDGGgg (BBB)" is included to facilitate the automatic processing of SNOWTAM messages in computer data banks. The explanation of these symbols is:

TT = data designator for SNOWTAM = SW;
AA = geographical designator for States, e.g. LF = FRANCE, EG = United Kingdom (see *Location Indicators* (Doc 7910), Part 2, Index to Nationality Letters for Location Indicators);
iiii = SNOWTAM serial number in a four-digit group;
CC CC = four-letter location indicator of the aerodrome to which the SNOWTAM refers (see *Location Indicators* (Doc 7910));
MMDDGGgg = date/time of observation/measurement, whereby:
MM = month, e.g. January = 01, December = 12
DD = day of the month
GGgg = time in hours (GG) and minutes (gg) UTC;
(BBB) = optional group for correction, in the case of an error, to a SNOWTAM message previouslydisseminated with the same serial number = COR.

Note 1: Brackets in (BBB) are used to indicate that this group is optional.

Note 2: When reporting on more than one runway and individual dates/times of observation/assessment are indicated by repeated Item B, the latest date/time of observation/assessment is inserted in the abbreviated heading (MMYYGGgg).

Note: The information groups are separated by a space, as illustrated above.

g) The text "SNOWTAM" in the SNOWTAM Format and the SNOWTAM serial number in a four-digit group must be separated by a space, for example: SNOWTAM 0124.
h) For readability purposes for the SNOWTAM message, include a line feed after the SNOWTAM serial number, after Item A, and after the aeroplane performance calculation section.
i) When reporting on more than one runway, repeat the information in the aeroplane performance calculation section from the date and time of assessment for each runway before the information in the situational awareness section.
j) Mandatory information is:

1) AERODROME LOCATION INDICATOR;
2) DATE AND TIME OF ASSESSMENT;
3) LOWER RUNWAY DESIGNATOR NUMBER;
4) RUNWAY CONDITION CODE FOR EACH RUNWAY THIRD; and
5) CONDITION DESCRIPTION FOR EACH RUNWAY THIRD (when runway condition code (RWYCC)is reported 1–5)

2. Aeroplane performance calculation section

Item A — Aerodrome location indicator (four-letter location indicator).
Item B — Date and time of assessment (eight-figure date/time group giving time of observation as month, day,hour and minute in UTC).
Item C — Lower runway designator number (nn[L] or nn[C] or nn[R]).

Note: Only one runway designator is inserted for each runway and always the lower number.

Item D — Runway condition code for each runway third. Only one digit (0, 1, 2, 3, 4, 5 or 6) is inserted for eachrunway third, separated by an oblique stroke (n/n/n).
Item E — Per cent coverage for each runway third. When provided, insert 25, 50, 75 or 100 for each runwaythird, separated by an oblique stroke ([n]nn/[n]nn/[n]nn).

Note 1: This information is provided only when the runway condition for each runway third (Item D) has been reported as other than 6 and there is a condition description for each runway third (Item G) that has been reported other than DRY.

Note 2: When the conditions are not reported, this will be signified by the insertion of "NR" for the appropriate runway third(s).

Item F — Depth of loose contaminant for each runway third. When provided, insert in millimetres for eachrunway third, separated by an oblique stroke (nn/nn/nn or nnn/nnn/nnn).

Note 1: This information is only provided for the following contamination types:

— *standing water, values to be reported 04, then assessed value. Significant changes 3 mm up to andincluding 15 mm;*
— *slush, values to be reported 03, then assessed value. Significant changes 3 mm up to and including 15 mm;*
— *wet snow, values to be reported 03, then assessed value. Significant changes 5 mm; and*
— *dry snow, values to be reported 03, then assessed value. Significant changes 20 mm.*

Note 2: When the conditions are not reported, this will be signified by the insertion of "NR" for theappropriate runway third(s).

Item G — Condition description for each runway third. Insert any of the following condition descriptions foreach runway third, separated by an oblique stroke.

COMPACTED SNOW
DRY SNOW
DRY SNOW ON TOP OF COMPACTED SNOW
DRY SNOW ON TOP OF ICE
FROST
ICE

SLUSH
STANDING WATER
WATER ON TOP OF COMPACTED SNOW
WET
WET ICE
WET SNOW
WET SNOW ON TOP OF COMPACTED SNOW
WET SNOW ON TOP OF ICE

DRY (only reported when there is no contaminant)

Note: When the conditions are not reported, this will be signified by the insertion of "NR" for the appropriate runway third(s).

Item H — Width of runway to which the runway condition codes apply. Insert the width in metres if less thanthe published runway width.

3. Situational awareness section

Note 1: Elements in the situational awareness section end with a full stop.

Note 2: Elements in the situational awareness section for which no information exists, or where the conditionalcircumstances for publication are not fulfilled, are left out completely.

Item I — Reduced runway length. Insert the applicable runway designator and available length in meters(example: RWY nn [L] *or* nn [C] *or* nn [R] REDUCED TO [n]nnn).

Note: This information is conditional when a NOTAM has been published with a new set of declareddistances.

Item J — Drifting snow on the runway. When reported, insert "DRIFTING SNOW".

Item K — Loose sand on the runway. When loose sand is reported on the runway, insert the lower runway designator and with a space "LOOSE SAND" (RWY nn *or* RWY nn[L] *or* nn[C] *or* nn[R] LOOSE SAND).

Item L — Chemical treatment on the runway. When chemical treatment has been reported applied, insert the lower runway designator and with a space "CHEMICALLY TREATED" (RWY nn *or* RWY nn[L] *or* nn[C] *or* nn[R] CHEMICALLY TREATED).

Item M — Snow banks on the runway. When snow banks are reported present on the runway, insert the lower runway designator and with a space "SNOW BANK" and with a space left "L" or right "R" or both sides "LR", followed by the distance in metres from centre line separated by a space FM CL (RWY nn *or* RWY nn[L] *or* nn[C] *or* nn[R] SNOW BANK Lnn *or* Rnn *or* LRnn FM CL).

Item N — Snow banks on a taxiway. When snow banks are present on a taxiway, insert the taxiway designator and with a space "SNOW BANK" (TWY [nn]n SNOW BANK).

Item O — Snow banks adjacent to the runway. When snow banks are reported present penetrating the height profile in the aerodrome snow plan, insert the lower runway designator and "ADJ

SNOW BANKS" (RWY nn *or* RWY nn[L] *or* nn[C] *or* nn[R] ADJ SNOW BANKS).

Item P — Taxiway conditions. When taxiway conditions are reported as poor, insert the taxiway designator followed by a space "POOR" (TWY [n *or* nn] POOR *or* ALL TWYS POOR).

Item R — Apron conditions. When apron conditions are reported as poor, insert the apron designator followed by a space "POOR" (APRON [nnnn] POOR *or* ALL APRONS POOR).

Item S — Measured friction coefficient. Where reported, insert the measured friction coefficient and friction measuring device.

Note: This will only be reported for States that have an established programme of runway friction measurement using a State-approved friction measuring device.

Item T — Plain language remarks.

Appendix 5 to GACAR Part 175 – ASHTAM FORMAT

(See§ 175.109 (f))

(COM heading)	(PRIORITY INDICATOR)	(ADDRESSEE INDICATOR(S))[1]			
	(DATE AND TIME (OF FILING)		(ORIGINATOR'S (INDICATOR)		
(Abbreviated heading)	(VA*[2] SERIAL NUMBER) V A *2 *2		(LOCATION INDICATOR)	DATE/TIME OF ISSUANCE	(OPTIONAL GROUP)

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 5 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 advisorycentre(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

1.1 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 3.5 below.

1.2 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.

1.3 Issuance of an ASHTAM giving information on a volcanic eruption, in accordance with paragraph 3 below, must **not** be delayed until complete information A) to K) is available but must 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) must 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 must 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”.

1.4 The maximum period of validity of ASHTAM is 24 hours. New ASHTAM must be issued whenever there is a change in the level of alert.

2. Abbreviated heading

2.1 Following the usual Aeronautical Fixed Telecommunication Network (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 is:

TT	=	data designator for ASHTAM = VA;
AA	=	geographical designator 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 serialnumber = COR.

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

3. Content of ASHTAM

3.1 *Item A* — Flight information region affected, plain-language equivalent of the location indicator given in the abbreviated heading.

3.2 *Item B* — Date and time (UTC) of first eruption.

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

3.4 *Item D* — Latitude/Longitude of the volcano in whole degrees or radial and distance of volcano from NAVAID as listed in Doc 9691, Appendix E, and on the World Map of Volcanoes and Principal Aeronautical Features).

3.5 *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-eruptivestate.
YELLOW ALERT	Volcano is experiencing signs of elevated unrest above known background levels. *or, after a change from a higher alert level:* Volcanic activity has decreased significantly but continues to be closely monitored forpossible 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 ifpossible]*.
RED ALERT	Eruption is forecast to be imminent with significant emission of ash into the atmospherelikely. *or,* Eruption is underway with significant emission of ash into the atmosphere *[specify ash-plumeheight 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 must be provided to the area control centre by the responsible vulcanological agency in theState concerned, e.g. "RED ALERT FOLLOWING YELLOW" OR "GREEN ALERT FOLLOWING ORANGE".

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

3.7 *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.

3.8 *Item H* — Indicate air routes and portions of air routes and flight levels affected, or expected to become affected.

3.9 *Item I* — Indicate closure of airspace, air routes or portions of air routes, and availability of alternative routes.

3.10 *Item J* — The source of the information (e.g. “special air-report” or “vulcanological agency.) must always be indicated, whether an eruption has actually occurred, or ash cloud reported, or not.

3.11 *Item K* — Include in plain language any operationally significant information additional to the foregoing.

Appendix 6 to GACAR Part 175 – TERRAIN AND OBSTACLE ATTRIBUTES PROVISION REQUIREMENTS

Table A6-1. Terrain attributes

Terrain attribute	Mandatory/Optional
Area of coverage	Mandatory
Data originator identifier	Mandatory
Data source 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 A6-2. Obstacle attributes

Obstacle attribute	Mandatory/Optional
Area of coverage	Mandatory
Data originator identifier	Mandatory
Data source 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
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

Appendix 7 to GACAR Part 175 – PREDETERMINED DISTRIBUTION SYSTEM FOR NOTAM

(See § 175.125 (b) 11)

1. The predetermined distribution system provides for incoming NOTAM (including SNOWTAM and ASHTAM) to be channeled through the Aeronautical Fixed Service (AFS) direct to designated addressees predetermined by the receiving State 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 AFS communication centre associated with the relevant international NOTAM office of the receiving State.

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"), SNOWTAM (letter "S"), 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 AFS 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 must be the filler letter "X" to complete the eight-letter addressee indicator.

3. The AIS service provider is to inform the international NOTAM office of States from which they receive NOTAM of the sixth and seventh letters to be used under different circumstances to ensure proper routing.

Appendix 8 to GACAR Part 175 – TERRAIN AND OBSTACLE DATA REQUIREMENTS
(See § 175.115)

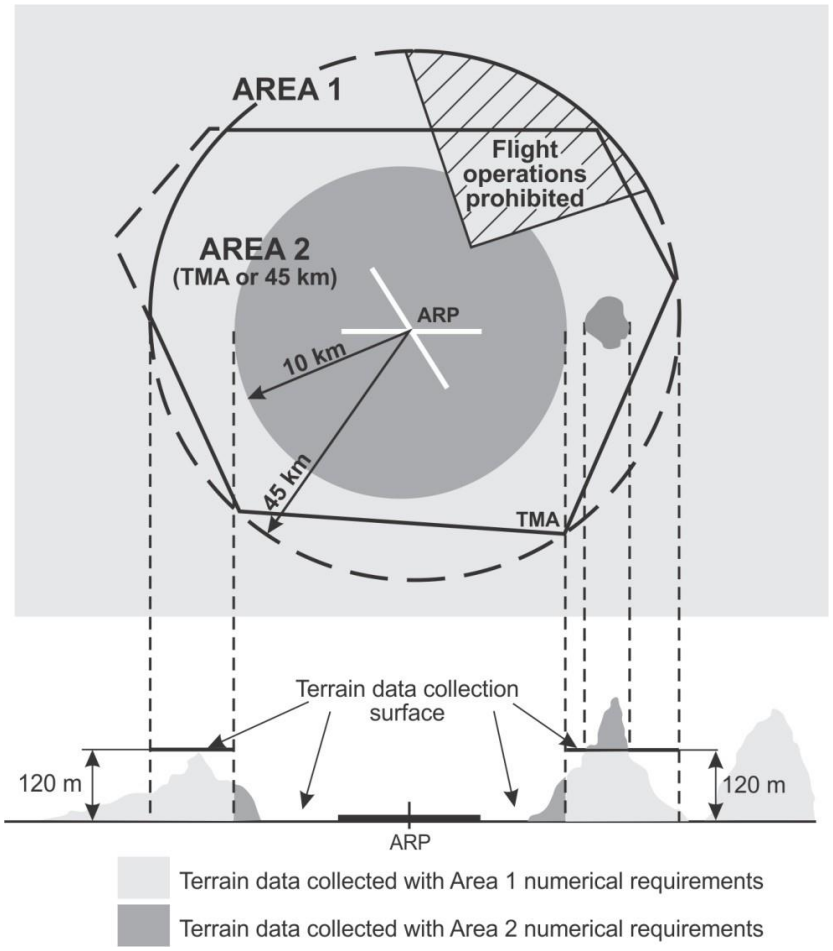


Figure A8-1. Terrain data collection surfaces — Area 1 and Area 2

1. Within the area covered by a 10-km radius from the Aerodrome Reference Point (ARP), terrain data must comply with the Area 2numerical requirements.
2. In the area between 10 km and the Terminal Control Area (TMA) boundary or 45-km radius (whichever is smaller), data on terrain that penetrates the horizontal plane 120 m above the lowest runway elevation must 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 notpenetrate the horizontal plane 120 m above the lowest runway elevation must 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/orregulations, terrain data must comply with the Area 1 numerical requirements.

Note: Terrain data numerical requirements for Areas 1 and 2 are specified in Appendix 1.

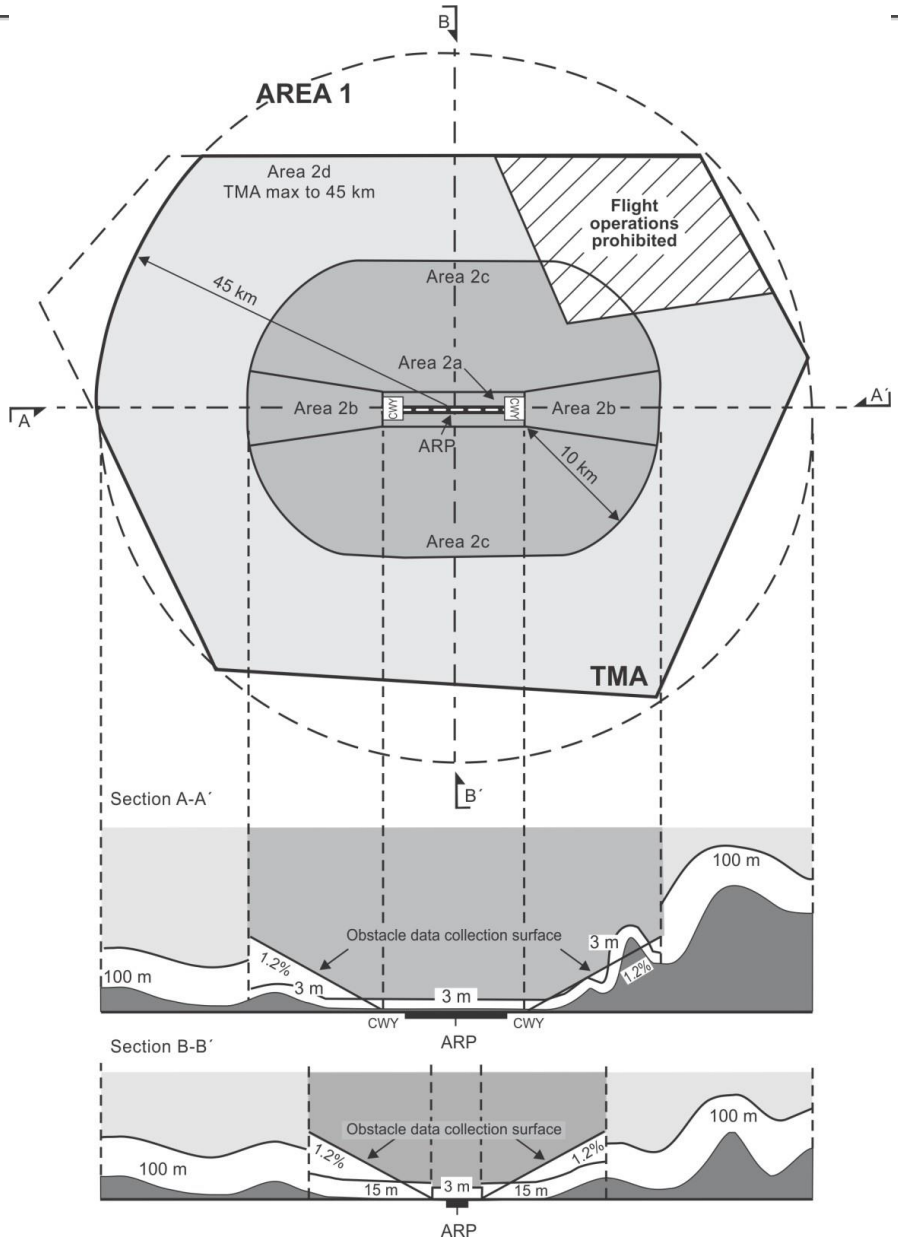


Figure A8-2. Obstacle data collection surfaces — Area 1 and Area 2

1. Obstacle data must be collected and recorded in accordance with the Area 2 numerical requirements specified in Appendix 1.
2. In those portions of Area 2 where flight operations are prohibited due to very high terrain or other local restrictions and/orregulations, obstacle data must 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 must be collected and recorded in thedatabase in accordance with the Area 1 numerical requirements specified in Appendix 1.

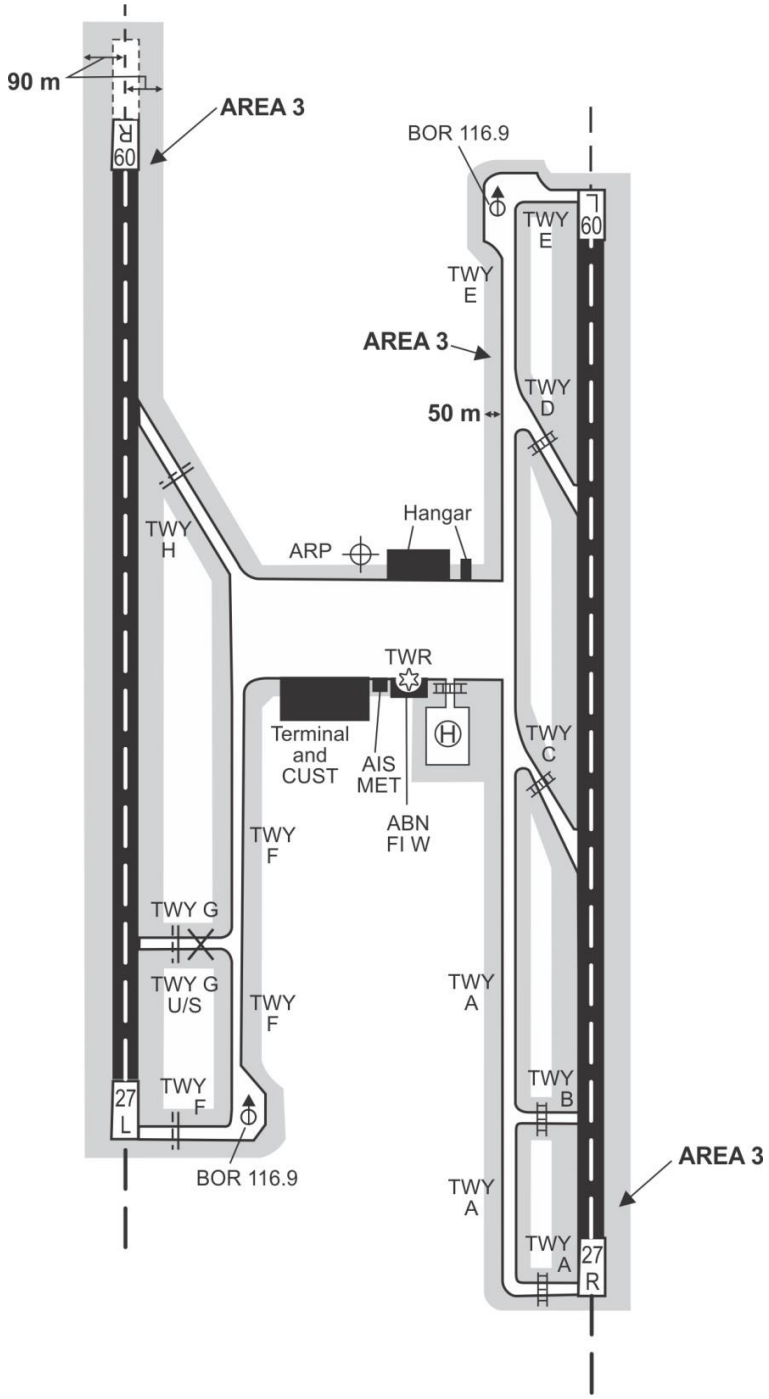


Figure A8-3. Terrain and obstacle data collection surface — Area 3

Terrain and obstacle data in Area 3 must comply with the numerical requirements specified in Appendix 1.

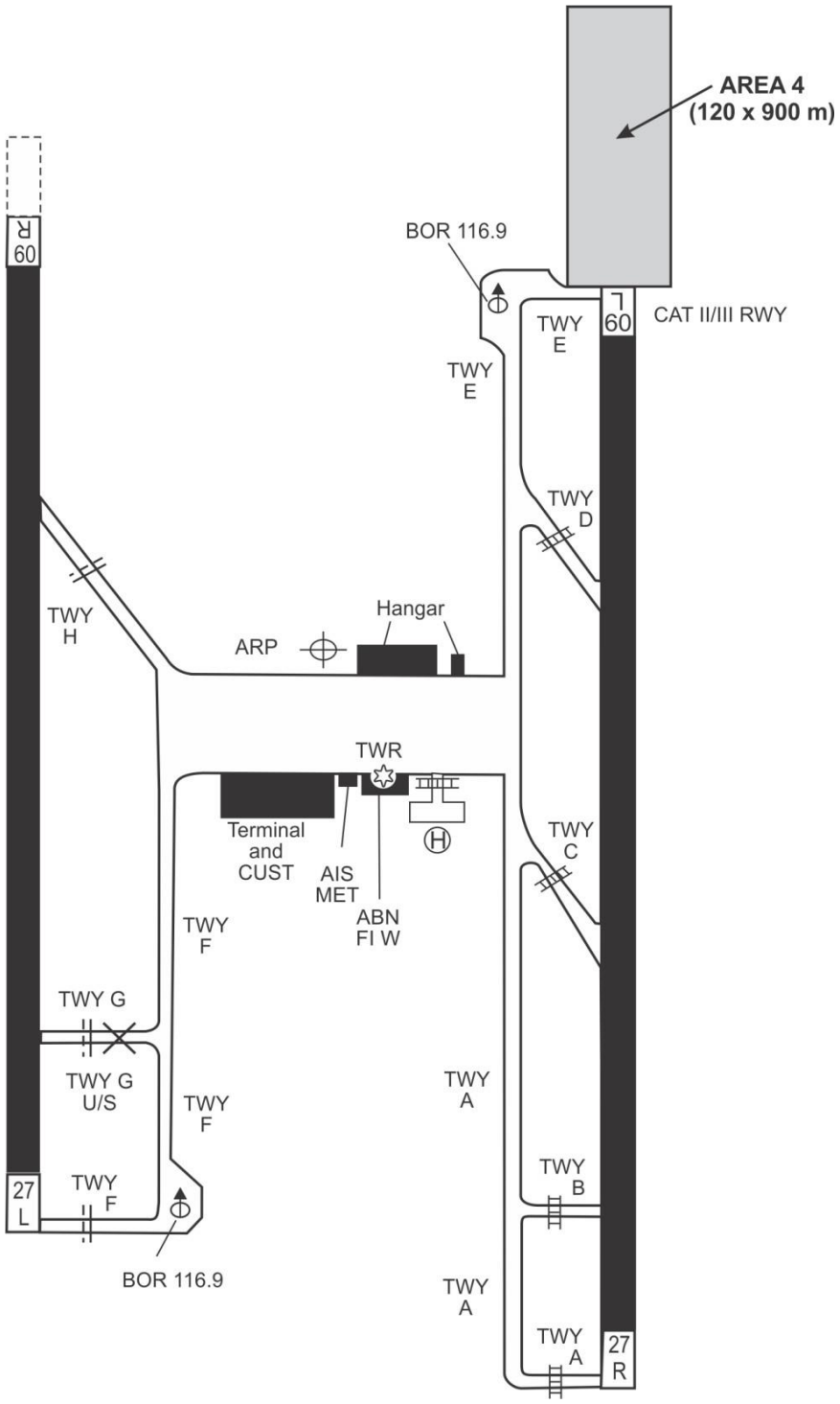
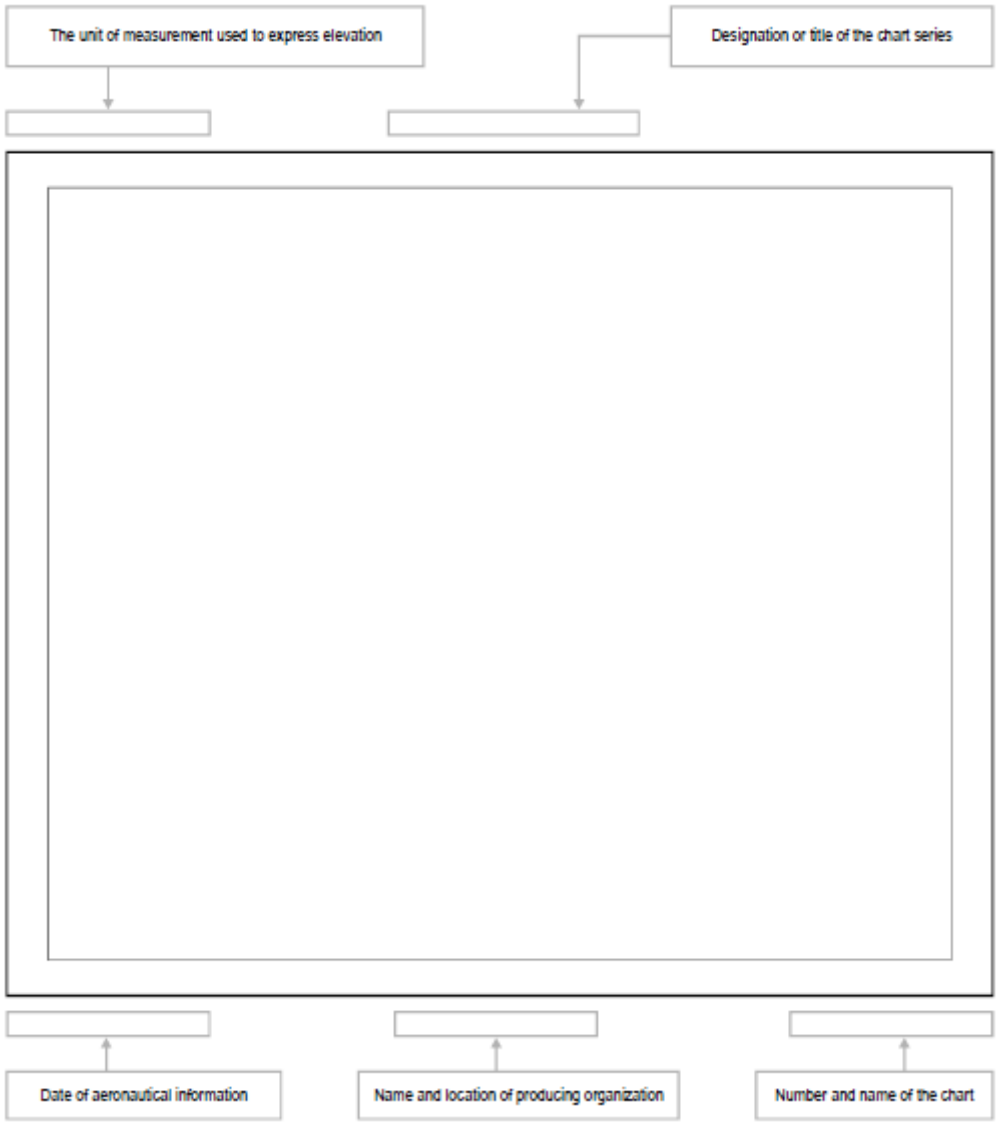


Figure A8-4. Terrain and obstacle data collection surface — Area 4

Terrain and obstacle data in Area 4 must comply with the numerical requirements specified in Appendix 1.

Appendix 9 to GACAR Part 175 – AERONAUTICAL CHARTS - MARGINAL NOTE LAYOUT

(See § 175.177)



Appendix 10 to GACAR Part 175 – AERONAUTICAL CHARTS - ICAO CHART SYMBOLS
(See § 175.179)

1. CATEGORY INDEX

	Symbol No.
Shoals	41
Shore line (reliable)	19
Shore line (unreliable)	20
Small river (perennial)	24
Spring, well or water hole	37
Swamp	35
Tidal flats	21
Unusual water features appropriately labelled	46
Wash	40
CULTURE (47–83)	
Built-up Areas (47–50)	
Buildings	50
City or large town	47
Town	48
Village	49
Railroads (51–56)	
Railroad (single track)	51
Railroad (two or more tracks)	52
Railroad (under construction)	53
Railroad bridge	54
Railroad station	56
Railroad tunnel	55
Highways and Roads (57–62)	
Dual highway	57
Primary road	58
Road bridge	61
Road tunnel	62
Secondary road	59
Trail	60
Miscellaneous (63–83)	
Boundaries (international)	63
Church	80
Coast guard station	73
Dam	67
Fence	65
Ferry	68
Forest ranger station	76
Fort	79
Lookout tower	74
Mine	75
Mosque	81
Nuclear power station	72
Oil or gas field	70
Outer boundaries	64
Pagoda	82

	Symbol No.
Pipeline	69
Race track or stadium	77
Ruins	78
Tank farms	71
Telegraph or telephone line (when a landmark)	66
Temple	83
AERODROMES (84–95)	
Abandoned or closed aerodrome	91
Aerodrome for use on charts on which aerodrome classification is not required	93
Civil — Land	84
Civil — Water	85
Emergency aerodrome or aerodrome with no facilities	90
Heliport	94
Joint civil and military — Land	88
Joint civil and military — Water	89
Military — Land	86
Military — Water	87
Runway pattern in lieu of the aerodrome symbol	95
Sheltered anchorage	92
Aerodrome data in abbreviated form which may be in association with aerodrome symbols	96
Aerodrome symbols for Approach Charts (97 and 98)	
Aerodromes affecting the traffic pattern on the aerodrome on which the procedure is based	97
The aerodrome on which the procedure is based	98
RADIO NAVIGATION AIDS (99–110)	
Basic radio navigation aid symbol	99
Collocated VOR and DME radio navigation aids — VOR/DME	103
Collocated VOR and TACAN radio navigation aids — VORTAC	107
Compass rose	110
Distance measuring equipment — DME	102
DME distance	104
Instrument landing system — ILS	108
Non-directional radio beacon — NDB	100
Radio marker beacon	109
UHF tactical air navigation aid — TACAN	106
VHF omnidirectional radio range — VOR	101
VOR radial	105
AIR TRAFFIC SERVICES (111–144)	
Advisory airspace — ADA	115
Advisory route — ADR	118
Aerodrome traffic zone — ATZ	112
Air defence identification zone — ADIZ	117
Altitudes/flight levels	125

	Symbol No.
ATS/MET reporting point — MRP	123
Change-over point — COP	122
Control area, Airway, Controlled route	113
Control zone — CTR	116
Final approach fix — FAF	124
Flight information region — FIR	111
Reporting and Fly-by/Flyover functionality	121
Scale-break (on ATS route)	120
Uncontrolled route	114
Visual flight path	119
Airspace Classifications (126 and 127)	
Aeronautical data in abbreviated form to be used in association with airspace classification symbols	127
Airspace classifications	126
Airspace Restrictions (128 and 129)	
International boundary closed to passage of aircraft except through air corridor	129
Restricted airspace (prohibited, restricted or danger area)	128
Obstacles (130–136)	
Elevation of top/Height above specified datum	136
Exceptionally high obstacle — lighted (optional symbol)	135
Exceptionally high obstacle (optional symbol)	134
Group obstacles	132
Lighted group obstacles	133
Lighted obstacle	131
Obstacle	130
Miscellaneous ((137–141)	
Isogonic line or isogonal	138
Ocean station vessel (normal position)	139
Prominent transmission line	137
Wind turbine — unlighted and lighted	140
Wind turbines — minor group and group in major area, lighted	141
Visual Aids (142–144)	
Aeronautical ground light	143
Lightship	144
Marine light	142
SYMBOLS FOR AERODROME/HELIPORT CHARTS (145–161)	
Aerodrome reference point	151
Hard surface runway	145
Helicopter alighting area on an aerodrome	150
Hot spot	161
Intermediate holding position	160
Landing direction indicator (lighted)	156
Landing direction indicator (unlighted)	157
Obstacle light	155

	Symbol No.
Pierced steel plank or steel mesh runway	146
Point light	154
Runway-holding position	159
Runway visual range (RVR) observation site	153
Stop bar	158
Stopway	148
Taxiways and parking areas	149
Unpaved runway	147
VOR check-point	152

SYMBOLS FOR AERODROME OBSTACLE CHARTS — TYPE A, B AND C (162–170)

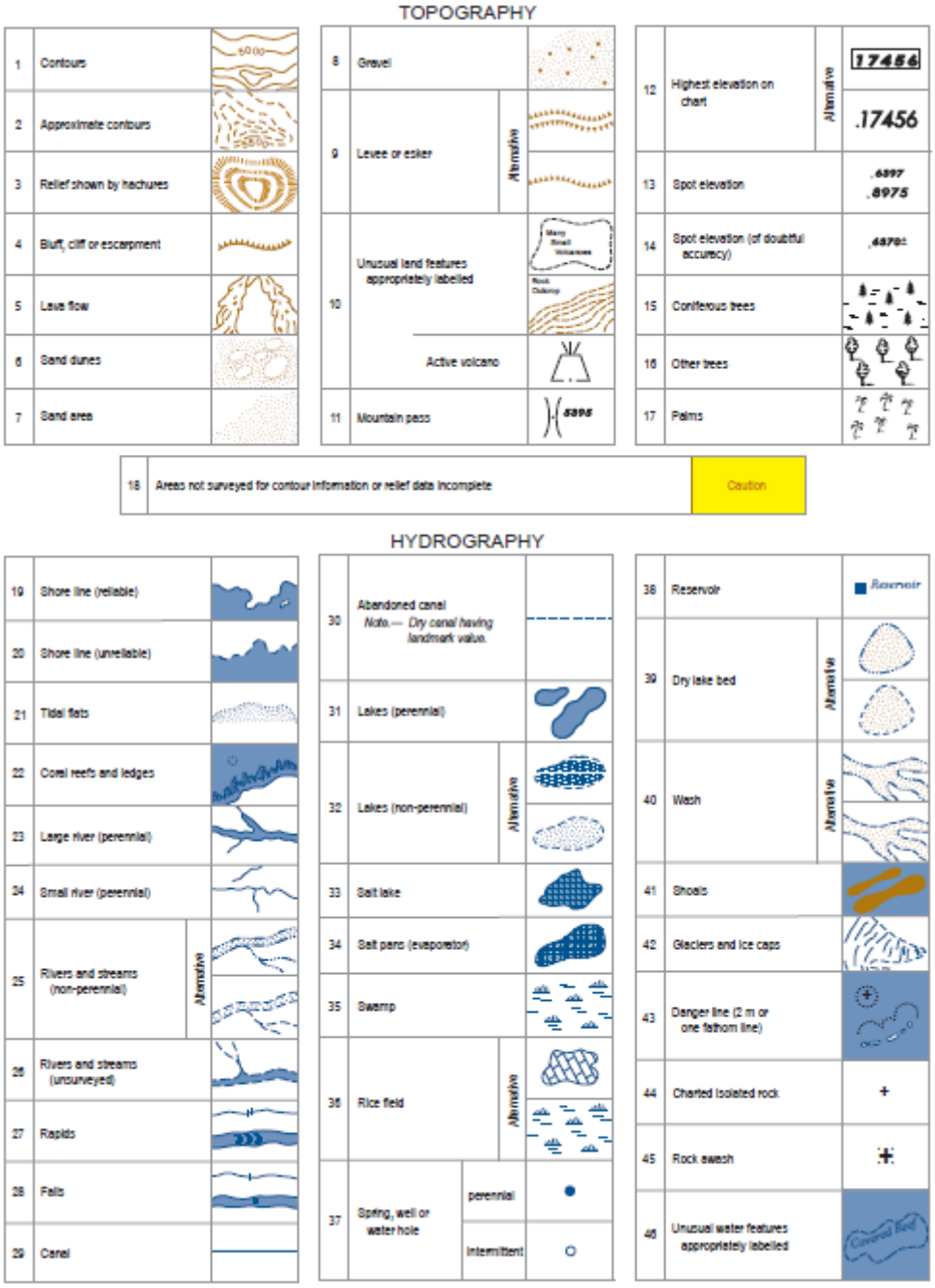
Building or large structure	164
Clearway	170
Escarpment	168
Pole, tower, spire, antenna, etc.	163
Railroad	165
Stopway	169
Terrain penetrating obstacle plane	167
Transmission line or overhead cable	166
Tree or shrub	162

ADDITIONAL SYMBOLS FOR USE ON PAPER AND ELECTRONIC CHARTS (171–180)

Collocated DME fix and marker beacon	180
Collocated radio navigation aid and marker beacon	178
DME fix	179
Holding pattern	173
Minimum sector altitude	171
Missed approach track	174
Radio marker beacon	177
Radio navigation aid	176
Runway	175
Terminal arrival altitude	172

2. ALPHABETICAL INDEX

	Symbol No.
W	
Wash	40
Water	
Civil	85
Military	87
Joint civil and military	89
Water features appropriately labelled, unusual	46
Water hole (perennial or intermittent)	37
Waypoint — WPT	121
Well (perennial or intermittent)	37
Wind turbine, unlighted and lighted	140
Wind turbines, minor group and group in major area, lighted	141


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)
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)
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)
33 Salt lake
34 Salt pans (evaporator)
35 Swamp
36 Rice field
37 Spring, well or water hole
perennial
intermittent
38 Reservoir
Reservoir
39 Dry lake bed
40 Wash
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
Covered Reef

CULTURE

BUILT-UP AREAS

47	City or large town	
48	Town	
49	Village	
50	Buildings	

HIGHWAYS AND ROADS

57	Dual highway	
58	Primary road	
59	Secondary road	
60	Trail	
61	Road bridge	
62	Road tunnel	

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	

RAILROADS

51	Railroad (single track)	
52	Railroad (two or more tracks)	
53	Railroad (under construction)	
54	Railroad bridge	
55	Railroad tunnel	
56	Railroad station	

MISCELLANEOUS

63	Boundaries (International)	
64	Outer boundaries	
65	Fence	
66	Telegraph or telephone line (when a landmark)	
67	Dam	
68	Ferry	

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		

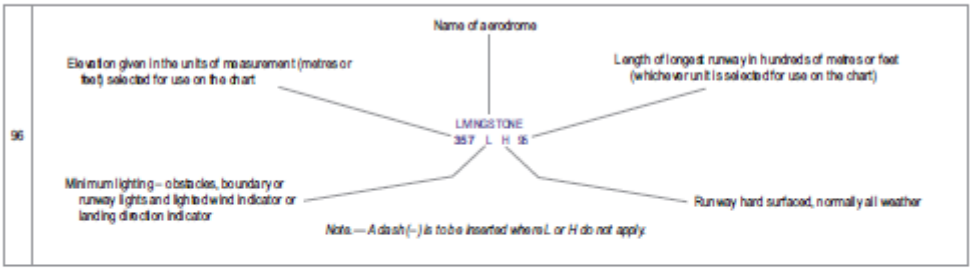
92	Sheltered anchorage	
93	Aerodrome for use on charts on which aerodrome classification is not required e.g. Enroute Charts	
94	Heliport *Note.— Aerodrome for the exclusive use of helicopters*	

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.)*

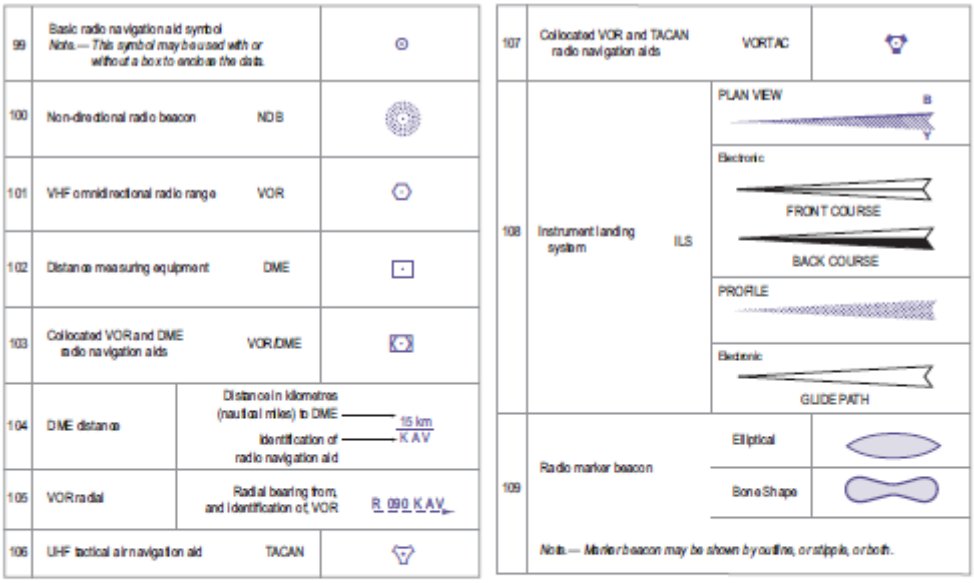
AERODROME DATA IN ABBREVIATED FORM WHICH MAY BE IN ASSOCIATION WITH AERODROME SYMBOLS

(Reference: 16.9.2.2 and 17.9.2.2)



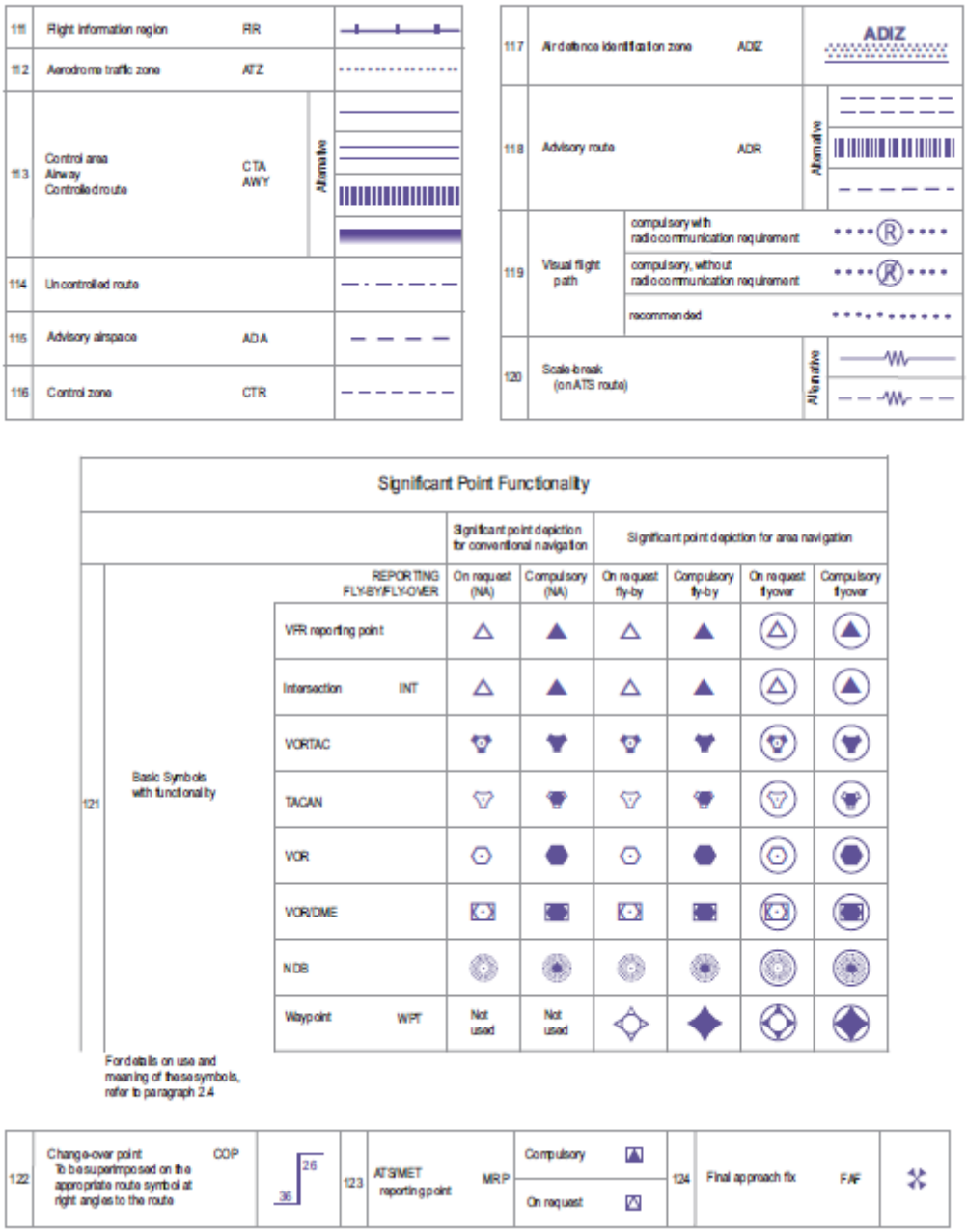
AERODROME SYMBOLS FOR APPROACH CHARTS

RADIO NAVIGATION AIDS*



*Note.— Guidance material on the presentation of radio navigation aid data is given in the Aeronautical Chart Manual (Doc 9697).

AIR TRAFFIC SERVICES

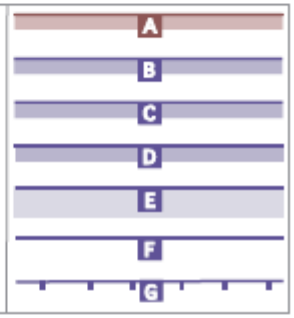


AIR TRAFFIC SERVICES *(cont.)*

125	Procedure altitudes/flight levels	Altitude/flight level "window"	17 000 10 000	FL 220 10 000
		"At or above" altitude/flight level	7 000	FL 070
		"At or below" altitude/flight level	5 000	FL 050
		"At" altitude/flight level	3 000	FL 030
		"Recommended" altitude/flight level	5 000	FL 050
		"Expected" altitude/flight level	Expect 5 000	Expect FL 050

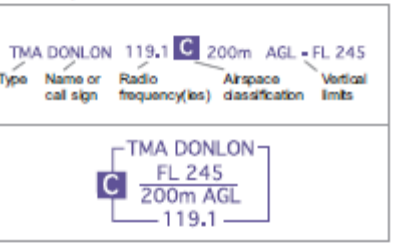
AIRSPACE CLASSIFICATIONS

126 Airspace classifications



Aeronautical data in abbreviated form to be used in association with airspace classification symbols:

127 Alternative



AIRSPACE RESTRICTIONS

128	Restricted airspace (prohibited, restricted or danger area)		Common boundary of two areas
	Note.— The angle and density of rulings may be varied according to scale and the size, shape and orientation of the area.		
129	International boundary closed to passage of aircraft except through air corridor		

OBSTACLES

130	Obstacle	
131	Lighted obstacle	
132	Group obstacles	
133	Lighted group obstacles	

134	Exceptionally high obstacle (optional symbol)	
135	Exceptionally high obstacle – lighted (optional symbol) *Note.— For obstacles having a height of the order of 300 m (1 000 ft) above terrain.*	
136	Elevation of top (tops) 52 (15) Height above specified datum (upright type in parentheses)	

MISCELLANEOUS

137	Prominent transmission line		140	Wind turbine – unlighted and lighted	
138	Isogonic line or isogonal	3° E	141	Wind turbines – minor group and group in major area, lighted	
139	Ocean station vessel (normal position)				

VISUAL AIDS

142	Marine light *Note 2.— Characteristics are to be indicated as follows:*	F	Alt Alternating B Blue F Fixed	*Note 1.— Marine alternating lights are red and white unless otherwise indicated. Marine lights are white unless colours are stated.*	Fl Flashing G Green Gp Group	Occ Occulting R Red SEC Sector	sec Second (U) Unwatched W White		
143	Aeronautical ground light	☆	Electronic ★	144	Lightship				

SYMBOLS FOR AERODROME/HELIPORT CHARTS

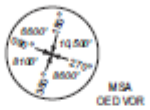
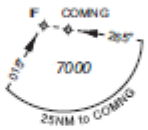
145	Hard surface runway		154	Point light	● ○
146	Aerodrome reference point ARP		155	Obstacle light	
147	Unpaved runway		156	Landing direction indicator (lighted)	
148	Stopway SWY		157	Landing direction indicator (unlighted)	T
149	Taxiways and parking areas		158	Stop bar	•••
150	Helicopter alighting area on an aerodrome	H	159	Runway-holding position Pattern A Pattern B *Note.— For application, see Annex 14, Volume I, 5.2.10.*	
151	Aerodrome reference point ARP		160	Intermediate holding position *Note.— For application, see Annex 14, Volume I, 5.2.11.*	
152	VOR check-point		161	Hot spot *Note.— Hot spot location to be circled.*	
153	Runway visual range (RVR) observation site				

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 11 to GACAR Part 175 – AERONAUTICAL CHARTS - COLOUR GUIDE
(See § 175.193)

CHART SYMBOLS

Culture, except highways and roads; outlines of large cities, grids and graticules; spot elevations; danger lines and off-shore rocks; names and lettering except for aeronautical and hydrographic features		BLACK	
Built-up areas of cities		BLACK Stipple	
Highways and roads	Optional colours	BLACK Half-tone	
		RED	
Built-up areas for cities (alternative to black stipple)		YELLOW	
Contours and topographic features: Items 1 through 10 of Appendix 2 Hydrographic features: Items 39 through 41 of Appendix 2		BROWN	
Shore lines, drainage, rivers, lakes, bathymetric contours and other hydrographic features including their names or description		BLUE	
Open water areas		BLUE Half-tone	
Salt lakes and salt pans		BLUE Stipple	
Large non-perennial rivers and non-perennial lakes		BLUE Stipple	
Aeronautical data, except for Enroute and Area Charts — ICAO, where different colours may be required. Both contours may be used on the same sheet but, where only one colour is used, dark blue is preferred	Optional colours	MAGENTA	
		DARK BLUE	

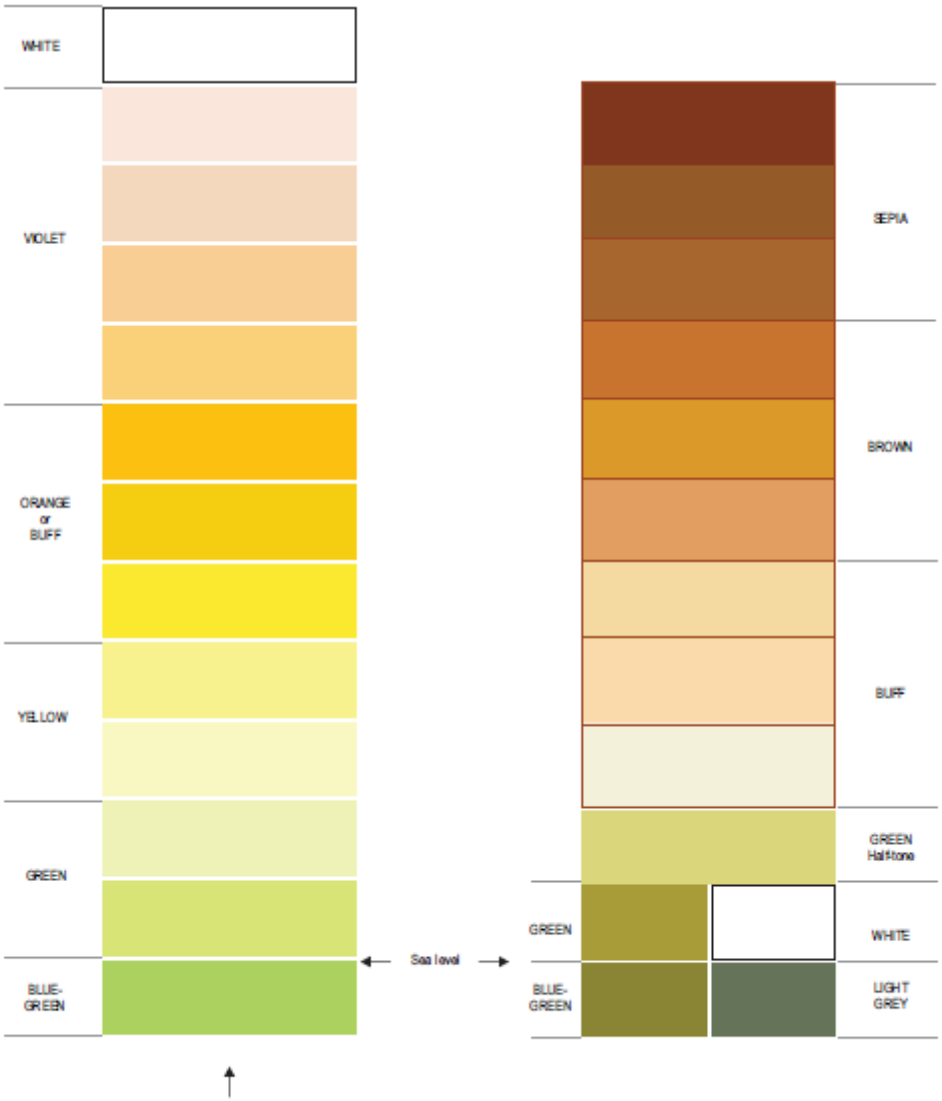
CHART SYMBOLS *(Cont.)*

Woods		GREEN	
Areas which have not been surveyed for contour information or relief data are incomplete	Optional colours	GOLDEN BUFF	
		WHITE	

HYPSOMETRIC TINTS

	WHITE	Tint for extreme elevations		SEPIA	
	VIOLET				
	ORANGE or BUFF	Tint for higher range elevations		BROWN	
	YELLOW	Tint for middle range elevations		BUFF	
	GREEN	Tint for lower range elevations	Optional colours	GREEN	
				WHITE	
	BLUE-GREEN	Tint for areas below sea level	Optional colours	BLUE-GREEN	
				LIGHT GREY	

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



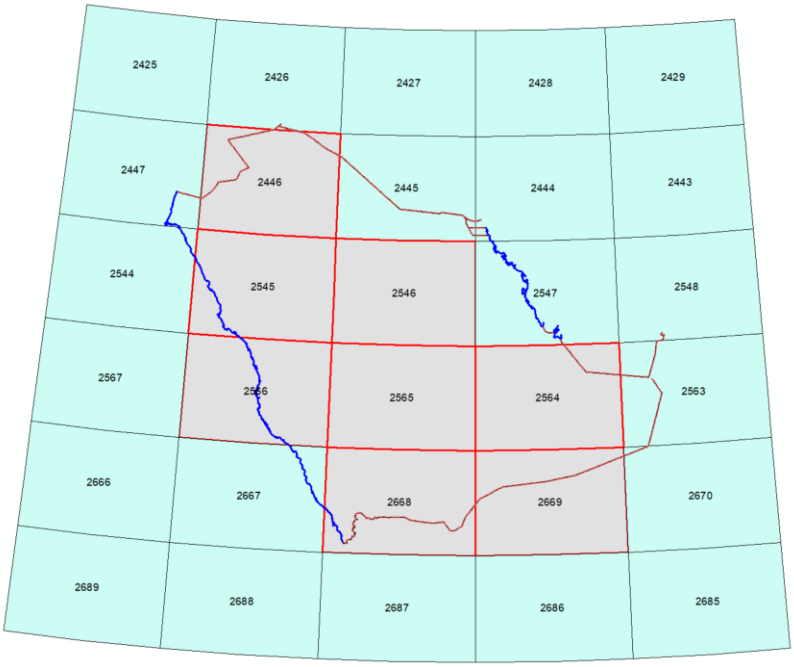
Note 1.— These tints are identical to those specified for the International Map of the World.

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

Appendix 12 to GACAR Part 175

AERONAUTICAL CHARTS - SHEET LAYOUT FOR THE WORLD AERONAUTICAL CHART (WAC) – ICAO 1:1000 000

(See § 175.425)



AERONAUTICAL CHARTS - SHEET LAYOUT FOR THE AERONAUTICAL CHART – ICAO 1:500 000

(See § 175.443)