CIVIL AVIATION SAFETY AUTHORITY OF PAPUA NEW GUINEA

PNG

Civil Aviation Rule

Part 175

Aeronautical Information Service Organisation – Certification and Operation

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DESCRIPTION

Part 175 prescribes –

- rules governing the certification and operation of organisations providing an aeronautical information service for Papua New Guinea on behalf of the Authority; and
- the requirements for the Papua New Guinea Aeronautical Information Publications, Aeronautical Information Circulars and NOTAM

BULLETIN

This Part first came into force on 1 January 2004 and now incorporates the following amendments:

Amendment	Effective Date
Amendment 1	01 May 2016
Amendment 2	01 February 2018
Amendment 2	13 November 2018
Amendment 4	11 December 2020
Amendment 5	02 November 2021
Amendment 6	04 November 2024

Summary of amendments:

Amendment 6 aligns Part 175 with ICAO Annex 15, Amendment 43.

Amendment 6:	175.321	(a) text amended
(Docket24/14/CAR175/46)	175.313	(b) text amended
	175 App A-	(4)(ii) &(iii) text amended
	175 App B-	(c) (18) text amended
	175 App B-	(d) (20) text amended
	175 App B-	(e)(5) new inclusion

Schedule of Rules

Subpart A —General

175.1 Purpose

This Part prescribes —

(1) rules governing the certification and operation of organizations providing an aeronautical information service for Papua New Guinea on behalf of the Authority; and

(2) the requirements for the Papua New Guinea Aeronautical Information Publications, Aeronautical Information Circulars and NOTAM;

(3) the aeronautical information management requirements; and

(4) the aeronautical charts requirements used for air navigation.

175.2 Definition

In this Part:

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

Aeronautical data means a representation of aeronautical facts, concepts or instructions in a formalized manner suitable for communication, interpretation or processing.

Aeronautical fixed service (AFS) means a telecommunication service between specified fixed points provided primarily for the safety of air navigation and for the regular, efficient and economical operation of air services.

Aeronautical information means information resulting from the assembly, analysis and formatting of aeronautical data.

Aeronautical information management (AIM) means the dynamic, integrated management of aeronautical information through the provision and exchange of quality-assured digital aeronautical data in collaboration with all parties.

Application means manipulation and processing of data in support of user requirements (ISO 19104*).

Assemble means a process of merging data from multiple sources into a database and establishing a baseline for subsequent processing.

Note. — The assemble phase includes checking the data and ensuring that detected errors and omissions are rectified.

Bare Earth means **s**urface of the Earth including bodies of water and permanent ice and snow, and excluding vegetation and man-made objects.

Canopy means bare earth supplemented by vegetation height.

Confidence level means the probability that the true value of a parameter is within a certain interval around the estimate of its value.

Note. — The interval is usually referred to as the accuracy of the estimate.

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

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

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

Data completeness means the degree of confidence that all of the data needed to support the intended use is provided.

Data format means a structure of data elements, records and files arranged to meet standards, specifications or data quality requirements.

Data product means data set or data set series that conforms to a data product specification (ISO 19131*):

Data product specification means detailed description of a data set or data set series together with additional information that will enable it to be created, supplied to and used by another party (ISO 19131*):

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

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

Data set means an identifiable collection of data (ISO 19101*):

Data set series means a collection of data sets sharing the same product specification (ISO 19115*):

Data traceability means the degree that a system or a data product can provide a record of the changes made to that product and thereby enable an audit trail to be followed from the end-user to the originator.

Electronic aeronautical chart display means an electronic device by which flight crews are enabled to execute, in a convenient and timely manner, route planning, route monitoring and navigation by displaying required information.

Hypsometric tints mean a succession of shades or color gradations used to depict ranges of elevation.

Isogonal means a line on a map or chart on which all points have the same magnetic variation for a specified epoch.

Isogriv means a line on a map or chart which joins points of equal angular difference between the North of the navigation grid and Magnetic North.

Magnetic variation means the angular difference between True North and Magnetic North.

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

Metadata means data about data (ISO 19115*).

Note. — Data that describes and documents data.

Missed approach point (MAPt) means that point in an instrument approach procedure at or before which the prescribed missed approach procedure must be initiated in order to ensure that the minimum obstacle clearance is not infringed.

Next intended user means the entity that receives the aeronautical data or information from the Aeronautical Information Service.

Obstacle/terrain data collection surface means a defined surface intended for the purpose of collecting obstacle/terrain data.

Origination (aeronautical data or aeronautical information) means the creation of the value associated with new data or information or the modification of the value of an existing data or information.

Originator (aeronautical data or aeronautical information) means an entity that is accountable for data or information origination and/or from which the AIS organization receives aeronautical data and information.

Orthometric height means height of a point related to the geoid, generally presented as an MSL elevation.

Position (geographical) means a set of coordinates (latitude and longitude) referenced to the mathematical reference ellipsoid which define the position of a point on the surface of the Earth.

Precision means the smallest difference that can be reliably distinguished by a measurement process.

Note. — In reference to geodetic surveys, precision is a degree of refinement in performance of an operation or a degree of perfection in the instruments and methods used when taking measurements.

** Note: ISO Standards.*

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

175.3 Requirement for certificate

No person shall provide an aeronautical information service for the Port Moresby FIR except under the authority of, and in accordance with, the provisions of an aeronautical information service certificate issued under this Part.

175.5 Application for certificate

An applicant for the grant of an aeronautical information service certificate shall complete form CA 175/01 and submit it to the Director with—

(1) the exposition required by 175.75; and

(2) a payment of the appropriate application fee prescribed by regulations made under the Act.

175.7 Issue of certificate

An applicant is entitled to an aeronautical information service certificate if the Director is satisfied that—

(1) the applicant meets the requirements of Subpart B; and

(2) the applicant, and the applicant's senior person or persons required by 175.51(a)(1) and are fit and proper persons; and

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

175.9 Privileges of certificate

The aeronautical information service certificate specifies the aeronautical information services that the certificate holder is authorized to provide.

175.11 Duration of certificate

(a) An aeronautical information service certificate remains in force until it expires or is suspended or revoked.

(b) The holder of an aeronautical information service certificate that expires or is revoked shall forthwith surrender the certificate to the Director.

(c) The holder of an aeronautical information service certificate that is suspended, shall forthwith produce the certificate to the Director for appropriate endorsement.

175.13 Renewal of certificate

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

Subpart B — Certification Requirements

175.51 Personnel requirements

(a) An applicant for the grant of an aeronautical information service certificate shall employ, contractor otherwise engage—

(1) a senior person identified as the Chief Executive who has the authority within the organisation to ensure that each aeronautical information service listed in the applicant's exposition can be financed and carried out to meet the applicable operational requirements, and

(2) senior person(s) ultimately be responsible to the Chief Executive who are responsible for ensuring that the organization complies with the requirements of this Part; and.

(3) sufficient personnel to collect, collate, check, coordinate, edit and publish aeronautical information for the aeronautical information services listed in the applicant's exposition; and

(b) The applicant must –

(1) establish procedures for initial and periodic assessment of personnel to demonstrate the required competencies and associated knowledge, skills and abilities for each function; and

(2) ensure that personnel identified to perform those functions are appropriately trained; and

(3) maintain appropriate training and qualification records.

175.53 Facility requirements

An applicant for the grant of an aeronautical information service certificate shall establish offices and facilities that—

(1) are appropriate for the aeronautical information services listed in their exposition; and

(2) meet the applicable requirements of 175.103(b) and 175.105.

175.55 Security Program

(a) An applicant for the grant of an aeronautical information service certificate shall establish a security program for the facilities listed in their exposition.

(b) The security program required by paragraph (a) shall specify the physical security requirements, practices and procedures that may be necessary-

(1) to minimize the risk of destruction, damage, or interference, to the certificate holder's facilities if such an act to a facility is likely to endanger the safety of air navigation; and

(2) to prevent unauthorized access to a facility; and

(3) for personnel to follow in the event of a bomb threat or other threat of violence at a facility; and

(4) to monitor unattended facilities to detect unauthorized intrusion or interference at a facility.

(5) to protect critical information and communications technology systems from interference that may jeopardize the safety of air navigation services.

(c) The security program required under paragraph (a) shall include procedures to notify, investigate and report security incidents to the Director in accordance with rule Part 12.

175.56 Data error detection

(a) The applicant for the grant of an aeronautical information service certificate shall establish procedures to ensure digital data error detection techniques are used during the transmission and/or storage of aeronautical data and digital data sets.

(b) The detection techniques shall be used in order to maintain the integrity levels as specified in Appendix A.

175.57 Scope of pre-flight information service

An applicant for the grant of an aeronautical information service certificate for a pre-flight information service shall, for the pre-flight services listed in their exposition, specify—

(1) the geographic area; and

(2) the aerodromes and the air routes originating from those aerodromes.

175.58 Scope of aeronautical data and aeronautical information

(a) An applicant for the grant of an aeronautical information service shall establish procedures to receive and manage the aeronautical data and aeronautical information for the following sub-domains:

(1) national regulations, rules and procedures

(2) aerodromes and heliports;

(3) airspace;

(4) ATS routes;

(5) instrument flight procedures;

(6) radio navigation aids/systems;

(7) obstacles;

(8) terrain; and

(9) geographical information.

(b) The procedures for the determination and reporting of aeronautical data shall be in accordance with the accuracy and integrity classification required to meet the needs of the end-user of aeronautical data.

(c) The applicant must ensure the collection of metadata is applied throughout the aeronautical information data chain for aeronautical data processes and exchange points from origination to distribution to the next intended user.

(d) Aeronautical data and aeronautical information must be kept up to date.

175.59 Documentation

(a) An applicant for the grant of an aeronautical information service certificate shall—

(1) document the format and standards for the aeronautical information published under the authority of their certificate; and

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

(3) hold copies of relevant reference material, standards, practices and procedures, and any other documentation that is necessary for the aeronautical information services listed in their exposition.

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

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

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

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

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

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

(c) Except as provided in paragraph (d) the applicant shall ensure one copy of each of the following aeronautical information products (where available) that have been requested by the AIS of a State are made available by the originating State and provided in the mutually agreed form(s), without charge, even where authority for publication or storage and distribution has been delegated to a non-governmental agency:

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

(2) Aeronautical Information Circulars (AIC);

(3) NOTAM; and;

(4) aeronautical charts.

(d) The applicant shall ensure when aeronautical data and aeronautical information are provided in the form of digital data sets to be used they are provided on the basis of agreement between the States concerned.

(e) The applicant shall ensure that globally interoperable aeronautical data and aeronautical information exchange models are used for the provision of data sets.

175.61 Collection of information

(a) An applicant for an aeronautical information service certificate shall establish procedures to collect and collate the information required for the aeronautical information services listed in their exposition.

(b) The procedures shall ensure that-

(1) applicable information is obtained from organizations that provide services in support of the Papua New Guinea air navigation system; and

(2) applicable information is obtained from the aeronautical information services of other States relevant to the requirements of international aircraft operators operating on international air routes originating from Papua New Guinea; and

(3) arrangement for the provision of aeronautical data and aeronautical information are made with the information originators prescribed in paragraph (b)(1) and (2) in accordance with 175.72(b); and

(4) Material to be issued as part of an aeronautical information product shall be thoroughly checked before it is submitted to the AIS, in order to ensure that all necessary information has been included and that it is correct in detail; and

(c) The procedures for the NOTAM service shall, in addition to paragraph (b), ensure that any originator's request for the issue of a NOTAM does not require the NOTAM to be effective for more than 3 months.

(d) The applicant shall obtain aeronautical data and aeronautical information to enable it to provide pre-flight information service and to meet the need for in-flight information from;

(1) AIS of other states; and

(2) other sources that may be available.

(e) The applicant shall promptly make available to AIS of other States any aeronautical data and aeronautical information necessary for the safety, regularity or efficiency of air navigation required by them to enable them to comply with paragraph (a).

(f) The applicant shall ensure any aeronautical information product which has been granted copyright protection by the originator in accordance with 175.59 can 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 that it is appropriately annotated.

(g) The applicant shall ensure that aeronautical data and aeronautical information provided in digital data sets are not to be provided to any third party without the consent of the providing State.

175.63 Publication of aeronautical information

(a) An applicant for the grant of an aeronautical information service certificate shall establish procedures for checking, coordinating, editing, publishing and disseminating aeronautical information for the services listed in applicant's exposition.

(b) The applicant must ensure that the procedures established under paragraph (a) provide for the following—

(1) the information received under 175.6 1 to be rechecked against available information is verified as accurate before its publication; and

(2) the information received under 175.61 to be edited, accurately published, and disseminated—

(i) in the format applicable to the operational significance of the information; and

(ii) where applicable, in accordance with Subparts D, E, F and G.

(3) permanent publications and long-term temporary publications to be clearly identified as being published under the authority of the applicant's aeronautical information

service certificate; and

(4) if aeronautical information obtained from the aeronautical information services of other States under 175.61(b)(2) is disseminated, that information to be clearly identified as having the authority of the originating State; and

(5) if information that has not been certified as required under 175.61(b)(4) is disseminated, that information must be clearly identified as being unverified; and

(6) any permanent change to published information to be coordinated with other applicable information originators before the change is published; and

(7) temporary information that is published without a defined expiry date to be reviewed at an appropriate time to ensure that the originator takes the required action to cancel or reissue the information; and

(8) the aeronautical information is published in the English language; and

(9) place names to be spelt according to local usage, transliterated when necessary into the ISO-Basic Latin alphabet; and

(10) units of measurement are consistent with those prescribed in Part 1; and

(11) abbreviations, consistent with those prescribed in Part 1, to be used in the published aeronautical information when—

(i) their use is appropriate; and

(ii) their use facilitates the dissemination of the information; and

(12) any of the aeronautical information published to be promptly made available to the aeronautical information services of other States, upon request by those States; and

(13) the aeronautical information to be made available in a form that is suitable for the operational requirements of—

(i) flight operations personnel, including flight crew members and the services responsible for pre-flight briefing; and

(ii) the air traffic service units responsible for flight information services.

(c) The applicant must ensure that the procedures for the PNGAIP service must, in addition to paragraph (b), require—

(1) aeronautical charts, and operationally significant information published in AIP Amendments and AIP Supplements, are published in accordance with the AIRAC system; and

(2) the information published under the AIRAC system to be clearly identified with the acronym AIRAC; and

(3) if an AIP Supplement is published to replace a NOTAM, the supplement shall include a reference to the serial number of the NOTAM; and

(4) in an AIP Amendment or AIP Supplement is published under the AIRAC system, a "Trigger" NOTAM to be originated.

175.65 Error correction in published information

(a) An applicant for the grant of an aeronautical information service certificate shall establish procedures to record, investigate, correct, and report any errors that are detected in the aeronautical information published under the authority of their certificate.

(b) The procedures shall ensure that—

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

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

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

(4) the Director is notified of a promulgated information incident in accordance with Part 12.

175.67 Records

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

(b) The procedures shall ensure that—

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

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

(3) there is a record of each internal quality assurance review of the applicant's organization carried out under the procedures required by rule 175.71; and

(4) all records are legible and of a permanent nature; and

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

175.69 Safety Management System

An applicant for the grant of an aeronautical information service certificate shall establish, implement and maintain a safety management system which meets the requirements of Part 100.

175.71 Quality Management System

An applicant for the grant of an aeronautical information service certificate shall establish, implement and maintain a quality management system which meets the requirements of Part 100.

175.72 Aeronautical Information Management

(a) An applicant for the grant of an aeronautical information service certificate shall establish implement and maintain a quality management system encompassing all functions of an AIS, and made demonstrable for each function stage.

(b) The applicant for the grant of an aeronautical information service shall establish procedures to ensure the timely collection, processing, storing, integration, exchange and delivery of

quality-assured aeronautical data and information within the ATM system.

(c) The procedures shall ensure that the following requirements are met in accordance with Appendix A of this rule–

(1) staff qualifications and training detailed in rule 175.51(b); and

(2) means of compliance that the service provided meets and continues to meet the requirements of this CAR and the AC 175/01. If non-compliance, initiating action to correct its cause shall be determined and taken without undue delay. All audit observations and remedial actions shall be evidenced and properly documented; and

(3) procedures exist to ensure that the transmission of information is appropriate and timely; and

(4) 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 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; and

(5) the system will provide the users with the necessary assurance and confidence that distributed aeronautical data and aeronautical information satisfy the aeronautical data-quality requirements; and

(6) accommodation and facilities including, in particular, communications equipment and the availability of alternative suitable means of communication in the event of the failure of the primary means.

(d) The applicant shall establish verification and validation procedures which will ensure that the quality requirements for the receipt of aeronautical data and aeronautical information are met.

(e) The applicant shall establish procedures to ensure that all necessary measures are taken to monitor compliance with the quality management system in place.

175.73 Human Factors consideration

(a) An applicant for the grant of an aeronautical information service certificate shall take into account the organization, design, contents, processing and distribution of aeronautical data and aeronautical information within its office when taking into consideration human factors principles which facilitate their optimum utilization.

(b) The applicant shall give due consideration to the integrity of information where human interaction is required and mitigating steps taken where risks are identified.

175.75 Organisation exposition

(a) An applicant for the grant of an aeronautical information service certificate shall provide the Director with an exposition containing—

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

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

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

and

(2) the titles and names of the senior person or persons required by rule 175.51(a)(1) and (2); and

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

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

(5) a summary of the applicant's staffing structure for each aeronautical information service listed under rule 175.51(a) (2, 3); and

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

(7) for a pre-flight information service, details of the area, aerodromes and air routes required by rule 175.57; and

(8) the location and address details of the applicable offices required by rule 175.103(b)(1) and rule 175.105(1); and

(9) details of the applicant's format and standards required by rule 175.59(a)(1) for their published aeronautical information; and

(10) details of the applicant's procedures required by—

(i) rule 175.51(b)(1) regarding the competence of personnel; and

(ii) rule 175.55 regarding the applicant's security program; and

(iii) rule 175.56 regarding data error detection; and

(iv) rule 175.57 regarding the scope of pre-flight information service; and

(v) rule 175.58 regarding the scope of aeronautical data and aeronautical information; and

(vi) rule 175.59 regarding the control of documentation; and

(vii) rule 175.61(a) regarding the collection of information; and

(viii) rule 175.63(a) regarding the publication of aeronautical information; and

(ix) rule 175.65(a) regarding the correction of errors in published information; and

(x) rule 175.67(a) regarding the identification, collection, indexing, storage maintenance, and disposal of records; and

(xi) rule 175.69 regarding safety management system; and

(xii) rule 175.71 regarding quality management system; and

(xiii) rule 175.72 regarding the aeronautical information management; and

(xiv) rule 175.73 regarding the human factors consideration.

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

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

Subpart C — Operating Requirements

175.101 Continued compliance

The holder of an aeronautical information service certificate shall—

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

(2) comply with all procedures and standards detailed in their exposition; and

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

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

(5) notify the Director of any change of address for service, telephone number, or facsimile number required by form CA 175/01 within 28 days of the change.

175.102 Aeronautical information products and services

(a) The holder of the aeronautical information service shall provide aeronautical information in the form of aeronautical information products and associated services.

(b) The holder shall ensure aeronautical information is provided in a standardized presentation for the AIP, AIP Amendments, AIP Supplements, AICs, NOTAMs and Aeronautical Charts for paper and/or as an electronic document.

(c) Where aeronautical data and aeronautical information are provided in multiple formats, processes shall be implemented to ensure data and information consistency between formats.

(d) The holder of the aeronautical information service certificate shall establish procedures for-

(1) data set to be amended or reissued at such regular intervals as may be necessary to keep them up to date; and

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

(3) updates to AIP and the digital data sets to be synchronized

175.103 AIP service

(a) The holder of the aeronautical information service certificate for the AIP service shall publish—

(1) the PNGAIP in accordance with Subpart D;

(2) AIP Amendments in accordance with 175.155; and

(3) AIP Supplements in accordance with 175.157 for notification of—

(i) temporary changes that are effective for 3 months or longer; and

(ii) information of less than 3 months′ duration which contains extensive text or graphics; and

(4) the Aeronautical Information Circular (AIC) in accordance with Subpart E.

(b) The certificate holder shall, in addition to paragraph (a)

(1) designate an office as Papua New Guinea's point of contact with the aeronautical information; services of other States for the interchange of the aeronautical information products, except NOTAM; and

(2) make the PNGAIP, AIP Amendments, AIP Supplements and AIC available to any person upon payment of a charge that may apply to the supply of the publications; and

(3) establish a system to disseminate the PNGAIP, AIP Amendments, AIP Supplements, aeronautical charts, and AIC published under the AIRAC system by the most expeditious means; and

(4) ensure that all aeronautical charts published as part of the PNGAIP conform to the applicable standards in accordance with subpart G; and

(5) coordinate the input of all aeronautical information from the originators prescribed in 175.61(b)(1), except—

(i) information which is of immediate operational significance necessitating the immediate issue of a NOTAM; and

(ii) temporary information of a duration of less than three months, that only requires the issue of a NOTAM.

175.105 NOTAM Service

(a) The holder of the aeronautical information service certificate for the NOTAM service shall—

(1) designate an International NOTAM Office (NOF) for Papua New Guinea; and

(2) operate the NOF on a 24-hour basis; and

(3) establish agreements with other international NOTAM offices for the exchange of NOTAM, AIP (including amendments and supplements), AIC, and aeronautical charts without charge; and

(4) promptly issue a NOTAM 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 that is in accordance with Subpart F, whenever information received under 175.61 requires the issue of a NOTAM; and

(5) issue a Trigger NOTAM when an AIP Amendment or an AIP Supplement is published in accordance with AIRAC Cycle.

175.107 Pre-flight information service and Post flight information service

(a) The holder of aeronautical information service certificate for pre-flight information for any aerodrome/heliport used for international air operations shall provide aeronautical information relative to the route stages origination at the aerodrome/heliport to-

(1) flight operation personnel, including flight crews; and

(2) services responsible for pre-flight information.

(b) The aeronautical information provided under paragraph (a) shall include information of operational significance from the elements of the aeronautical information products.

(c) The holder for post-flight information service shall make arrangements to receive information reported or observed by aircrews concerning-

(1) the operational status of air navigation facilities or services noted by flight crews; and

(2) the presence of wildlife hazards observed by flight crews.

(d) The holder shall ensure that such information is made available to the aeronautical information service (AIS) for distribution as the circumstance necessitates.

175.109 Changes to certificate holder's organization

(a) The holder of an aeronautical information service certificate shall ensure that their exposition is amended so as to remain a current description of the holder's organization and services.

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

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

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

(1) the Chief Executive:

(2) the listed senior persons:

(3) the aeronautical information services provided by the holder:

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

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

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

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

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

Subpart D — Papua New Guinea Aeronautical Information Publication

175.151 Contents of PNGAIP

(a) The PNGAIP shall contain current information, data and aeronautical charts relating to—

(1) the regulatory and airspace requirements for air navigation in the Port Moresby FIR in which Papua New Guinea is responsible for air traffic services; and

(2) the Papua New Guinea services and facilities that support international air navigation to and from Papua New Guinea; and

(3) the services and facilities that support air navigation within the Port Moresby flight information region; and

(4) aerodromes operating under an aerodrome operating certificate issued under Part139.

(b) The PNGAIP may contain current information, data, and aeronautical charts relating to aerodromes not operating under an aerodrome operating certificate, where—

(1) the aerodrome operator provides the holder of the aeronautical information service certificate for the AIP service with the required data and information relating to the aerodrome; and

(2) the aerodrome operator accepts responsibility for the accuracy and currency of that data and information.

(c) The PNGAIP shall include—

(1) a statement to advise which certificated organizations are responsible for the air navigation facilities, services and procedures covered by the PNGAIP; and

(2) the general conditions under which those services and facilities are available for use; and

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

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

175.153 Specifications for PNGAIP

(a) Each publication that forms part of the PNGAIP shall—

(1) specify the purpose of the publication, the geographic area covered and that the publication is part of the PNGAIP; and

(2) be self-contained, include a table of contents with page numbers, and be paginated clearly; and

(3) specify that it is published—

(i) by the holder of the aeronautical information service certificate for the AIP service; and

(ii) under the authority of their certificate issued by the Director; and

(4) not duplicate information unnecessarily and if duplication is necessary, there shall be no difference in the duplicated information in respect of the same facility, service or procedure; and

(5) be dated, or where the publication is in loose-leaf form, each page shall be dated. The date shall consist of the day, month by name, and the year when the aeronautical information becomes effective; and

(6) permanent changes to the AIP shall be published as AIP Amendments; and

(7) be kept up-to-date by means of AIP Amendments or by reissue at regular intervals; and

(8) show clearly the degree of reliability of any unverified information.

(b) A publication published in loose-leaf form shall—

(1) specify on each page, which publication the page belongs to and that the page is part of the PNGAIP; and

(2) contain a checklist that—

(i) gives the current date, and page number or chart title of each page or chart in the publication; and

(ii) is issued with each AIP Amendment; and

(iii) specifies which publication it belongs to; and

(iv) is printed with a page number and the date as prescribed in paragraph(a)(5).

175.155 Specifications for AIP amendment

Each AIP Amendment shall clearly identify, by a distinctive symbol or annotation, all changes to the published information, and all new information on a reprinted page.

175.157 Specifications for AIP Supplement

(a) The AIP Supplement pages shall remain part of the AIP while any part of their contents remains valid.

(b) A checklist of AIP Supplements currently in force shall be issued with each AIP Supplement or at intervals of not more than one month. The checklist shall be given the same distribution as the supplement.

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

175.159 Aeronautical Information Regulation and Control (AIRAC)

(a) Information concerning the following circumstances shall be 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) ATS routes;

(vi) permanent danger, prohibited and restricted areas (including type and periods of activity when known);

(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.

(10) Aerodrome operating minima if published by a State.

(b) The information notified under the AIRAC system shall not be 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.

(c) Information provided under the AIRAC system shall be made available by the AIS so as to reach recipients at least 28 days in advance of the effective date.

(d) When information has not been submitted by the AIRAC date, a NIL notification shall be distributed not later than one cycle before the AIRAC effective date concerned.

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

175.161 Use of automation

(a) Automation shall be applied in order to ensure the quality, efficiency and cost-effectiveness of aeronautical information service.

(b) In order to meet the data quality requirements, automation shall:

(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

(c) Due consideration to the integrity of data and information shall be given when automated processes are implemented and mitigating steps taken where risks are identified.

Subpart E — Aeronautical Information Circular (AIC)

175.201 Specifications for an AIC

(a) An AIC shall be used to provide—

(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 shall not be used for information that qualifies for inclusion in AIP or NOTAM

(c) The validity of AIC currently in force shall be reviewed at least once a year.

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

Subpart F —NOTAM

175.251 Specifications for NOTAM

(a) A NOTAM must be allocated a serial number by the NOTAM Office in either an A series or a C series. The serial number within each series must be consecutive and based on the calendar year.

(b) The C series of NOTAM must only contain aeronautical information that—

(1) is operationally significant to operators operating within the Port Moresby FIR; and

(2) is not published in the A series of NOTAM.

(c) The A series of NOTAM must contain aeronautical information that is operationally significant to international operators operating in the Port Moresby FIR; and

(d) If a NOTAM contains information that requires an amendment to the AIP or an AIP Supplement, the NOTAM must contain across-reference to the affected AIP text or AIP Supplement.

(e) A checklist of valid NOTAM shall be regularly provided.

175.253 Distribution of NOTAM

(a) A NOTAM shall be distributed on the basis of a request.

(b) The C series of NOTAM shall be distributed within Papua New Guinea.

(c) The A series of NOTAM shall be distributed within Papua New Guinea and to those international NOTAM offices with whom agreements have been established under 175.105(3).

(d) The Aeronautical Fixed Service (AFS) shall be employed for NOTAM distribution, whenever practicable.

(e) 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 shall precede the text of the NOTAM.

(f) The originating State shall upon request, grant distribution of NOTAM series other than those distributed internationally.

(g) International exchange of NOTAM shall take place only as mutually agreed between the international NOTAM offices concerned and between the NOTAM offices and multinational NOTAM Processing Units.

(h) A NOTAM must be prepared in conformity with the relevant provisions of the ICAO communication procedures.

Subpart G — Aeronautical Charts

175.301 General Standards and Specifications of Charts

(a) Each aeronautical chart that forms part of the PNGAIP shall—

(1) provide information relevant to the function of the chart and its design shall observe Human Factors principles which facilitate its optimum use;

(2) provide information appropriate to the phase of flight to ensure the safe and expeditious operation of the aircraft;

(3) be accurate, free from distortion and clutter, unambiguous, and be readable under all normal operating conditions;

(4) be such that the colors or tints and type size used for the chart can be easily read and interpreted by the pilot in varying conditions of natural and artificial light;

(5) clearly indicate on the face of each chart the date of validity of the aeronautical information.; and

(6) present information provided on each chart to permit smooth transition from chart to chart as appropriate to the phase of flight.

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

175.302 Availability of Charts

(a) An applicant for an aeronautical information service certificate shall, when so specified, ensure the availability of charts in whichever of the following ways is appropriate for a particular chart of single sheet of a chart series.

(b) For any chart or single sheet of a chart series entirely contained within the territory of a Contracting State, the State having jurisdiction over the territory shall either:

(1) produce the chart or sheet itself; or

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

(3) provide another Contracting State prepared to accept an obligation to produce the chart or sheet with the data necessary for its production.

(c) The applicant shall take all reasonable measures to ensure that the information it provides and the aeronautical charts made available are adequate and accurate and that they are maintained up to date by an adequate revision service.

175.303 Title and presentation of Charts

(a) The title of a chart or chart series prepared in accordance with the specifications contained in rule 175.301 and intended to satisfy the function of the chart shall be that of the relevant chapter heading as modified by application of any Standard contained therein, except that such title shall not include "ICAO" unless the chart conforms with all Standards specified in Annex 4 and any specified for the particular chart;

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

175.305 Miscellaneous Information

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

(1) designation or title of the chart series;

(2) name and reference of the sheet;

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

***Note**. — The title may be abbreviated.*

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

(c) The name and adequate address of the producing agency shall be shown in the margin of the chart except that, where the chart is published as part of an aeronautical document, this information may be placed in the front of that document.

(d) The marginal note layout shall be as given in Appendix 1 of Annex 4, except as otherwise specified for a particular chart.

175.307 Chart Symbols

(a) Symbols used shall conform to those shown in Appendix C — 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 chart symbol or impair the legibility of the chart;

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

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

175.309 Geographical names

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

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

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

175.311 Air Traffic Services airspaces

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 or frequencies to be used shall be indicated and the horizontal limits depicted in accordance with Appendix C— Chart Symbols.

175.313 Aeronautical Data

(a) An applicant for an aeronautical information service certificate shall take all necessary measures to introduce a properly organized quality system containing procedures, processes and resources necessary to implement quality management at each function stage;

(b) The execution of such quality management shall be made demonstrable for each function stage, when required. In addition, AIS shall ensure that established procedures exist in order that aeronautical data at any moment is traceable to its origin so to allow any data anomalies or errors, detected during the production/maintenance phases or in the operational use, to be corrected.

(c) The chart resolution of aeronautical data shall be that as specified for a particular chart

175.315 Scale and projection

For charts of large areas, the name and basic parameters and scale of the projection shall be indicated. For charts of small areas, a linear scale only shall be indicated.

175.317 Units of measurements

(a) The geodesic distances used for the linear dimensions on aerodromes and short distances shall be expressed in meters.

(b) The order of resolution of distances dimensions, elevation and heights shall be that as specified for a particular chart;

(c) The units of measurement used to express distances, altitude, elevation and heights shall be expressed in either metres or feet or both, provided the units are clearly differentiated and conspicuously stated on the face of each chart;

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

175.319 Magnetic variation

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

175.321 Common reference system

(a) The latest version of the World Geodetic System – 1984 (WGS-84, G2139) reference frame shall be used as the horizontal (geodetic) reference system. Published aeronautical geographical coordinates (indicating latitude and longitude) shall be expressed in terms of the WGS-84 geodetic reference datum;

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

(c) Mean sea level (MSL) datum, shall be used as the vertical reference system for international air navigation;

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

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

175.323 Political boundaries

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

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

175.325 Relief

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

(1) orientation and identification;

(2) safe terrain clearance;

(3) clarity of aeronautical information when shown;

(4) planning.

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

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

175.327 Aeronautical Charts applicable to Papua New Guinea

The following aeronautical charts shall, when available for designated international aerodromes/heliport, form part of the AIP, or be provided separately to recipients of the PNG AIP. The individual chart specifications are provided in Appendix B-

(1) Aerodrome Obstacle Chart - ICAO Type A (Operating Limitation)

(2) Enroute Chart – ICAO

(3) Standard Departure Chart – Instrument (SID) – ICAO

(4) Standard Arrival Chart – Instrument (STAR) – ICAO

(5) Instrument Approach Chart – ICAO

(6) Visual Approach Chart – ICAO

(7) Aerodrome/Heliport Chart – ICAO

(8) Aircraft Parking/Docking Chart – ICAO

(9) ATC Surveillance Minimum Altitude Chart – ICAO

Subpart H — Transition Provisions

175.351 Transition

Transition provisions detailed in Part 20 apply to this Part.

Appendix A – Digital data sets

(a) General

(1) The order of accuracy for aeronautical data shall be in accordance with its intended use.

(2) The order of resolution of aeronautical data shall be commensurate with the actual data accuracy.

(3) The integrity of aeronautical data shall be maintained throughout the data process from origination to distribution to the next intended user.

(4) Based on the applicable integrity classifications, procedures shall 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 the risk of errors.

(5) Traceability of aeronautical data shall be ensured and retained as long as the data is in use.

(6) Timeliness shall be ensured by including limits on the effective period of the data elements.

(7) Completeness of the aeronautical data shall be ensured in order to support the intended use.

(8) The format of delivered data shall be adequate to ensure that the data is interpreted in a manner that is consistent with its intended use.

(b) Digital data sets

(1) Digital data shall be in the form of the following data sets:

(i) AIP data set;

(ii) terrain data sets;

(iii) obstacle data sets;

(iv) aerodrome mapping data sets; and

(v) instrument flight procedure data sets.

(2) Each data set shall be provided to the next intended user together with at least the minimum set of metadata that ensures traceability.

(3) A checklist of valid data sets shall be regularly provided.

(4) The AIP data set shall contain the digital representation of aeronautical information of lasting character (permanent information and long duration temporary changes) essential to air navigation.

(5) Terrain data sets shall 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.

(a) Terrain data shall be provided for Area 1.

(b) For aerodromes regularly used by international civil aviation, terrain data shall be provided for:

(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) For aerodromes regularly used by international civil aviation, terrain data shall be 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.

(6) Obstacle data sets shall contain the digital representation of the vertical and horizontal extent of obstacles.

(a) Obstacle data shall not be included in terrain data sets.

(b) Obstacle data shall be provided for obstacles in Area 1 whose height is 100 m or higher above ground.

(c) For aerodromes regularly used by international civil aviation, obstacle data shall be provided for all obstacles within Area 2 that are assessed as being a hazard to air navigation.

(d) For aerodromes regularly used by international civil aviation, obstacle data shall be provided for:

(i) 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 shall 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;

(ii) 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; and

(iii) penetrations of the aerodrome obstacle limitation surfaces.

(e) For aerodromes regularly used by international civil aviation, obstacle data shall be provided for Area 4 for all runways where precision approach Category II or III operations have been established.

(7) Aerodrome mapping data sets shall contain the digital representation of aerodrome features.

(8) Instrument flight procedure data sets shall contain the digital representation of instrument flight procedures.

Appendix B – Standards and Specification for Aeronautical Charts

(a) Aerodrome Obstacle Chart - Type A

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

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

(3) Elevations for Aerodrome Obstacle Chart Type A shall be shown to the nearest foot and the linear dimensions shall be shown to the nearest half-metre;

(4) The extent of each plan shall be sufficient to cover all obstacles and the horizontal scale shall be within the range of 1:10,000 to 1: 15,000;

(5) The vertical scale shall be ten times the horizontal scale;

(6) The horizontal and vertical linear scales showing both metres and feet shall be included in the charts;

(7) The chart shall depict a plan and profile of each runway, any associated stopway or clearway, the take-off flight path area and obstacles;

(8) The profile for each runway, stopway, clearway and the obstacles in the take-off flight path area shall be shown above its corresponding plan;

(9) The profile of an alternative take-off flight path area shall comprise a linear projection of the full take-off flight path and shall be disposed above its corresponding plan in the manner most suited to the ready interpretation of the information;

(10) The profile grid shall be ruled over the entire profile area exclusive of the runway. The zero for vertical coordinates shall be mean seal level. The zero for horizontal coordinates shall be the end of the runway furthest from the take-off flight path area concerned. Graduation marks shall be shown along the base of the grid and along the vertical margins;

(11) The chart shall include:

(i) a box for recording the operational data for declared distances;

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

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

(13) The magnetic variation to the nearest degree and date of information shall be indicated;

(14) Objects in the take-off flight path area which project above a plane surface having a 1.2 per cent slope and having a common origin with the take-off flight path area shall be regarded as obstacles, except that obstacles lying wholly below the shadow of other obstacles as defined in sub-para (16) need not be shown,

(15) Mobile objects such as boats, trains and trucks, which may project above 1.2 per cent plane, shall be considered obstacles but shall not be considered as being capable of

creating a shadow;

(16) The shadow of an obstacle is considered to be a plane surface origination at a horizontal line passing through the top of the obstacle at right angle 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 sub-para (14) or to the next higher obstacle if it occurs first. For the first 300m (1000 ft) of the take-off flight path area, the shadow planes are horizontal and beyond this point such planes have an upward slope of 1.2 per cent;

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

(18) 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 180m (600 ft) and this width increases at the rate of 0,25D to a maximum of 1800m (6000 ft), where D is the distance from the point of origin;

(iii) it extends to the point beyond which no obstacles exist or to a distance of 10.0 km (5.4 NM) whichever is the lesser;

(19) For runways serving aircraft having operating limitation 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 sub-para (18) (iii) shall be increased to not less than 12.0 km (6.5NM) and the slope of the plane surface specified in sub-para (14) & (16) shall be reduced to 1.0 per cent of less;

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

(i) take-off run available;

(ii) accelerate-stop distance available;

(iii) take-off distance available;

(iv) landing distance available.

(21) The plan view shall show:

(i) The outline of the runway 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 clearway 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 not centered on the extension of the runway centre line are shown, notes shall be provided explaining the significance of such areas;

(v) Obstacles, including:

(1) The exact location of each obstacle together with a symbol indicative of its type;

(2) The elevation and identification of each obstacle;

(3) The limits of penetration of obstacles of large extent in a distinctive manner identified in the legend;

(22) When stopways are shown, the length of each stopway shall be indicated;

(23) The profile view shall 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:

(1) 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;

(2) Identification of each obstacle;

(3) The limits of penetration of obstacles of large extent in a distinctive manner identified in the legend.

(24) The order of accuracy attained shall be shown on the chart;

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

(b) Enroute Chart

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

(2) Where different air traffic services routes, position reporting requirements or lateral limits of flight information regions or control areas exist in different layers of airspace and cannot be shown with sufficient clarity on one chart, separate charts shall be provided;

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

(4) An adequate overlap of charts shall be provided to ensure continuity of navigation;

(5) Parallels and meridians shall be shown at suitable intervals;

(6) Graduation marks shall be placed at consistent intervals along selected parallels and meridians;

(7) Each sheet shall be identified by chart series and number;

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

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

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

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

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

(13) All aerodromes used by international civil aviation to which an instrument approach can be made shall be shown;

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

(15) Where appropriate, the components of the established air traffic services system shall be shown. The components shall include the following:

(i) the radio navigation aids associated with the air traffic services system together with their names, identifications, frequencies and geographical coordinates in degrees, minutes and seconds;

(ii) in respect of DME, additionally the elevation of the transmitting antenna of the DME to the nearest 30 m (100 ft);

(iii) an indication of all designated airspace, including lateral and vertical limits and the appropriate class of airspace;

(iv) All ATS routes for en-route flight including route designators, the track to the nearest degree in both directions along each segment of the routes and, where established, the designation of the navigation specification(s) including any limitations and the direction of traffic flow;

(v) all significant points which define the ATS routes and are not marked by the position of a radio navigation aid, together with their name-codes and geographical coordinates in degrees, minutes and seconds;

(vi) in respect of waypoints defining VOR/DME area navigation routes, additionally,

(1) the station identification and radio frequency of the reference VOR/DME;

(2) 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;

(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;

(x) minimum en-route altitudes and minimum obstacle clearance altitudes, on ATS routes to the nearest higher 50 metres or 100 feet (see 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.

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

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

(c) Standard Departure Chart – Instrument (SID)

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

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

(3) The coverage of the chart shall be sufficient to indicate the point where the departure route begins and the specified significant point at which the en-route phase of flight along a designated air traffic services route can be commenced;

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

(5) When the chart is not drawn to scale, the annotation "NOT TO SCALE" shall be shown and the symbol for scale-break shall be used on tracks and other aspects of the chart which are too large to be drawn to scale;

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

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

(8) The chart shall be identified by the name of the city or town or area which the aerodrome serves, the name of the aerodrome and the identification of the standard departure route(s) — instrument as established in accordance with the *Procedures for Air Navigation Services — Aircraft Operations* (PANS-OPS, Doc 8168), Volume II, Part I, Section 3, Chapter 5;

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

(10) Magnetic variation used in determining the magnetic bearings, tracks and radials shall be shown to the nearest degree;

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

Note. *— A note to this effect may be included on the chart.*

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

(13) The aerodrome of departure shall be shown by the runway pattern;

(14) All aerodromes which affect the designated standard departure route — instrument shall be shown and identified. Where appropriate, the aerodrome runway patterns shall be shown;

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

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

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

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

(i) a graphic portrayal of each standard departure route — instrument, including:

(1) for departure procedures designed specifically for helicopters, the term "CAT H" shall be depicted in the departure chart plan view;

(2) route designator;

(3) significant points defining the route;

(4) track or radial to the nearest degree along each segment of the route;

(5) distances to the nearest kilometre or nautical mile between significant points;

(6) 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 restriction where established;

(7) where the chart is drawn to scale and vectoring on departure is provided, established minimum vectoring altitudes to the nearest higher 50 m or 100 ft, clearly identified;

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

(1) plain language name;

(2) identification;

(3) frequency;

(4) geographical coordinates in degrees, minutes and seconds;

(5) for DME, the channel and the elevation of the transmitting antenna of the DME to the nearest 30 m (100 ft);

(iii) the name-codes of the significant points not marked by the position of a radio navigation aid, their geographical coordinates in degrees, minutes and seconds and the bearing to the nearest tenth of a degree and distance to the nearest two-

tenths of a kilometre (tenth of a nautical mile) from the reference radio navigation aid;

(iv) applicable holding patterns;

(v) transition altitude/height t the nearest higher 300 m or 1 000 ft;

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

(vii) area speed restrictions, where established;

(viii) for PBN procedures, a PBN requirement box;

(ix) all compulsory and "on-request" reporting points;

(x) radio communication procedures, including:

(1) call sign(s) of ATS unit(s);

(2) frequency and, if applicable, SATVOICE number;

(3) transponder setting, where appropriate;

(xi) an indication of "flyover" significant points.

(19) Appropriate data to support navigation database coding shall be published in accordance with the *Procedures for Air Navigation Services — Aircraft Operations* (PANS-OPS, Doc 8168).

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

(d) Standard Arrival Chart – Instrument (STAR)

(1) This chart shall provide the flight crew with information to enable it to comply with the designated standard arrival route—instrument from the en-route phase to the approach phase;

(2) The Standard Arrival Chart — Instrument (STAR) shall be made available wherever a standard arrival route —instrument has been established and cannot be shown with sufficient clarity on the Area Chart;

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

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

(5) When the chart is not drawn to scale, the annotation "NOT TO SCALE" shall be shown and the symbol for scale break shall be used on tracks and other aspects of the chart which are too large to be drawn to scale;

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

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

(8) Graduation marks shall be placed at consistent intervals along the neat lines;

(9) The chart shall be identified by the name of the city or town or area which the aerodrome serves, the name of the aerodrome, and the identification of the standard arrival route(s) — instrument as established in accordance with the *Procedures for Air Navigation Services* — Aircraft Operations (PANS-OPS, Doc 8168), Volume II, Part I, Section 4, Chapter 2;

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

(11) Magnetic variation used in determining the magnetic bearings, tracks and radials shall be shown to the nearest degree;

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

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

(14) The aerodrome of landing shall be shown by the runway pattern;

(15) All aerodromes which affect the designated standard departure route — instrument shall be shown and identified. Where appropriate, the aerodrome runway patterns shall be shown;

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

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

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

(19) The components of the established relevant air traffic services system shall be shown;

(20) The components shall comprise the following:

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

(1) route designator;

(2) significant points defining the route;

(3) track or radial to the nearest degree along each segment of the route;

(4) distances to the nearest kilometre or nautical mile between significant points;

(5) 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;

(6) 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 — 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) unless excessive chart clutter will result.

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

(1) plain language name;

(2) identification;

(3) frequency;

(4) geographical coordinates in degrees, minutes and seconds;

(5) for DME, the channel and the elevation of the transmitting antenna of the DME to the nearest 30 m (100 ft);

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

(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;

(viii) all compulsory and "on-request" reporting points;

(ix) radio communication procedures, including:

(1) call sign(s) of ATS unit(s);

(2) frequency and, if applicable, SATVOICE number;

(3) transponder setting, where appropriate;

(x) an indication of "flyover" significant points; and

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

(21) Appropriate data to support navigation database coding shall be published in accordance with the *Procedures for Air Navigation Services — Aircraft Operations* (PANS-OPS, Doc 8168).

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

(e) Instrument Approach Chart

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

(2) Instrument Approach Charts shall be made available for all aerodromes used by international civil aviation where instrument approach procedures have been established by the State concerned;

(3) A separate Instrument Approach Chart shall normally be provided for each precision approach procedure established by the State;

(4) A separate Instrument Approach Chart shall normally be provided for each non-precision approach procedure established by the State;

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.

(5) When the values for track, time or altitude differ between categories of aircraft on other than the final approach segment of the instrument approach procedures and the listing of these differences on a single chart could cause clutter or confusion, more than one chart shall be provided;

(6) Instrument Approach Charts shall be revised whenever information essential to safe operation becomes out of date;

(7) The coverage of the chart shall be sufficient to include all segments of the instrument approach procedure and such additional areas as may be necessary for the type of approach intended;

(8) The scale selected shall ensure optimum legibility consistent with:

(i) the procedure shown on the chart;

(ii) sheet size.

(9) A scale indication shall be given;

(10) 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, shall be shown; its radius shall be indicated on the circumference;

(11) A distance scale shall be shown directly below the profile;

(12) The sheet size should be 210 x 148 mm (8.27 x 5.82 in);

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

(14) The chart shall be identified by the name of the city or town or area which the aerodrome serves, the name of the aerodrome and the identification of the instrument approach procedure as established in accordance with the *Procedures for Air Navigation Services — Aircraft Operations* (PANS-OPS, Doc 8168), Volume II, Part I, Section 4, Chapter 9;

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

(16) Relief shall be shown in a manner best suited to the particular elevation characteristics of the area. In areas where relief exceeds 1 200 m (4 000 ft) above the aerodrome elevation within the coverage of the chart or 600 m (2 000 ft) within 11 km (6 NM) of the aerodrome reference point or when final approach or missed approach procedure gradient is steeper than optimal due to terrain, all relief exceeding 150 m (500 ft) above the aerodrome elevation shall be shown by smoothed contour lines, contour values and layer tints printed in brown. Appropriate spot elevations, including the highest elevation within each top contour line, shall also be shown printed in black;

(17) In areas where relief is lower than specified in (16), all relief exceeding 150 m (500 ft) above the aerodrome elevation shall be shown by smoothed contour lines, contour values and layer tints printed in brown. Appropriate spot elevations, including the highest elevation within each top contour line, shall also be shown printed in black;

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

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

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

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

(22) The runway pattern, at a scale sufficiently large to show it clearly, shall be shown for:

(i) the aerodrome on which the procedure is based;

(ii) aerodromes affecting the traffic pattern or so situated as to be likely, under adverse weather conditions, to be mistaken for the aerodrome of intended landing.

(23) The aerodrome elevation shall be shown to the nearest metre or foot in a prominent position on the chart;

(24) The threshold elevation or, where applicable, the highest elevation of the touchdown zone shall be shown to the nearest metre or foot;

(25) Obstacles shall be shown on the plan view of the chart;

(26) The elevation of the top of obstacles shall be shown to the nearest (next higher) metre or foot;

(27) The heights of obstacles above a datum other than mean sea level (26) shall be shown. When shown, they shall be given in parentheses on the chart;

(28) When the heights of obstacles above a datum other than mean sea level are shown, the datum shall be the aerodrome elevation except that, at aerodromes having an instrument runway (or runways) with a threshold elevation more than 2 m (7 ft) below the aerodrome elevation, the chart datum shall be the threshold elevation of the runway to which the instrument approach is related;

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

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

(31) Obstacles that penetrate the visual segment surface shall be identified on the chart;

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

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

(33) Radio navigation aids required for the procedures together with their frequencies, identifications and track-defining characteristics, if any, shall be shown. In the case of a procedure in which more than one station is located on the final approach track, the facility to be used for track guidance for final approach shall be clearly identified. In addition, consideration shall be given to the elimination from the approach chart of those facilities that are not used by the procedure;

(34) The initial approach fix (IAF), the intermediate approach fix (IF), the final approach fix (FAF) (or final approach point (FAP) for an ILS approach procedure), the missed

approach point (MAPt), where established, and other essential fixes or points comprising the procedure shall be shown and identified;

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

(36) Radio communication frequencies, including call signs, that are required for the execution of the procedures;

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

(38) The minimum sector altitude or terminal arrival altitude established by the competent authority shall be shown, with a clear indication of the sector to which it applies;

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

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

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

(iii) any additional procedure track, other than those specified in 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.

(40) A profile shall be provided normally below the plan view showing the following data:

(i) the aerodrome by a solid block at aerodrome elevation;

(ii) the profile of the approach procedure segments by an arrowed continuous line indicating the direction of flight;

(iii) the profile of the missed approach procedure segment by an arrowed broken line and a description of the procedure;

(iv) the profile of any additional procedure segment, other than those specified in (ii) and (iii), by an arrowed dotted line;

(v) bearings, tracks, radials to the nearest degree and distances to the nearest two-tenths of a 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.

(41) Aerodrome operating minima when established by the State shall be shown;

(42) The obstacle clearance altitudes/heights for the aircraft categories for which the procedure is designed shall be shown; for precision approach procedures, additional OCA/H for Cat DL aircraft (wing span between 65 m and 80 m and/or vertical distance between the flight path of the wheels and the glide path antenna between 7 m and 8 m) shall be published, when necessary;

(43) When the missed approach point is defined by a distance from the final approach fix, or 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 shall be shown;

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

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

(46) 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 shall be shown;

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

(48) 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).

(49) Appropriate data to support navigation database coding shall be published in accordance with the *Procedures for Air Navigation Services — Aircraft Operations* (PANS-OPS, Doc 8168).

(50) For approach procedures having PBN segments, a PBN requirements box shall be included.

(f) Visual Approach Chart

(1) This chart shall provide flight crews with information which will enable them to transit from the en-route/descent to approach phases of flight to the runway of intended landing by means of visual reference;

(2) The Visual Approach Chart shall be made available for all aerodromes used by international civil aviation where:

(i) only limited navigation facilities are available; or

(ii) radio communication facilities are not available; or

(iii) no adequate aeronautical charts of the aerodrome and its surroundings at 1:500 000 or greater scale are available; or

(iv) visual approach procedures have been established.

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

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

(5) The chart shall be identified by the name of the city or town which the aerodrome serves and the name of the aerodrome;

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

(7) Shore lines, lakes, rivers and streams shall be shown;

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

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

(10) Bearings, tracks and radials shall be magnetic;

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

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

(13) The aerodrome elevation shall be shown in a prominent position on the chart;

(14) Obstacles shall be shown and identified;

(15) The elevation of the top of obstacles shall be shown to the nearest (next higher) metre or foot;

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

(17) Prohibited areas, restricted areas, and danger areas shall be depicted with their identification and vertical limits;

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

(19) Visual approach procedures shall be shown where applicable;

(20) Visual aids for navigation shall be shown as appropriate;

(21) 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, shall be shown;

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

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

(g) Aerodrome/Heliport Chart

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

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

(ii) from the runway to the aircraft stand; and helicopter movement:

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

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

(v) along helicopter ground and air taxiways; and

(vi) along air transit routes;

(vii) it shall also provide essential operational information at the aerodrome/heliport;

(2) The Aerodrome/Heliport Chart shall be made available for all aerodromes/heliports regularly used by international civil aviation;

(3) The coverage and scale shall be sufficiently large to show clearly all the elements listed in (6) A linear scale shall be shown;

(4) The chart shall be identified by the name of the city or town or area which the aerodrome/heliport serves and the name of the aerodrome/heliport;

(5) True and Magnetic North arrows and magnetic variation to the nearest degree and annual change of the magnetic variation shall be shown;

(6) This chart shall show:

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

(ii) 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;

(iii) 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;

(iv) 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;

(v) 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;

(vi) 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);

(vii) 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.

(viii) 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.

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

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

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

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

(xiii) approach and runway lighting;

(xiv) 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;

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

(xvi) obstacles to taxiing;

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

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

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

(7) In addition to the items in (6) relating to heliports, the chart shall show:

(i) heliport type;

Note.— Heliport types are identified in Annex 14, Volume II, as surface-level, elevated or helideck.

(ii) touchdown and lift-off area including dimensions to the nearest metre, slope, type of surface and bearing strength in tonnes;

(iii) 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;

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

(v) helicopter clearway including length and ground profile;

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

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

(viii) declared distances to the nearest metre for heliports, where relevant, including:

(1) take-off distance available;

(2) rejected take-off distance available.

(3) landing distance available.

(h) Aircraft Parking/Docking Chart

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

(2) The coverage and scale shall be sufficiently large to show clearly all the elements listed in (4);

(3) The chart shall be identified by the name of the city or town or area which the aerodrome serves and the name of the aerodrome;

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

(i) apron elevation to the nearest metre or foot;

(ii) 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;

(iii) geographical coordinates in degrees, minutes, seconds and hundredths of seconds for aircraft stands;

(iv) taxiway entries with designations, including runway-holding positions and, where established, intermediate holding positions, and stop bars;

(v) 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.*

(vi) geographical coordinates in degrees, minutes, seconds and hundredths of seconds for appropriate taxiway centre line points;

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

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

(ix) obstacles to taxiing;

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

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

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

(i) ATC Surveillance Minimum Altitude Chart

(1) This supplementary chart shall provide information that will enable flight crews to monitor and cross-check altitudes assigned by a controller using an ATS surveillance system;

(2) A note indicating that the chart may only be used for cross-checking of altitudes assigned while the aircraft is identified shall be prominently displayed on the face of the chart;

(3) The coverage of the chart shall be sufficient to effectively show the information associated with vectoring procedures;

(4) The chart shall be drawn to scale;

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

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

(7) The chart shall be identified by the name of the aerodrome for which the vectoring procedures are established or, when procedures apply to more than one aerodrome, the name associated with the airspace portrayed;

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

(9) Appropriate spot elevations and obstacles shall be shown;

(10) The average magnetic variation of the area covered by the chart shall be shown to the nearest degree;

(11) Bearings, tracks and radials shall be magnetic;

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

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

(14) The elevation of the primary aerodrome to the nearest metre or foot shall be shown;

(15) Prohibited, restricted and danger areas shall be depicted with their identification;

(16) The chart shall show components of the established air traffic services system including:

(i) relevant radio navigation aids together with their identifications;

(ii) lateral limits of relevant designated airspace;

(iii) relevant significant points associated with standard instrument departure and arrival procedures;

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

(iv) transition altitude, where established;

(v) information associated with vectoring including:

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

(2) 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.*

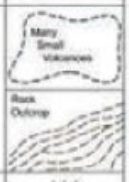
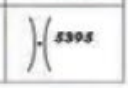
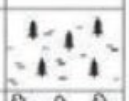
(3) distance circles at 20-km or 10-NM intervals or, when practicable, 10-km or 5-NM intervals shown as fine dashed lines with the radius indicated on the circumference and centred on the identified aerodrome main VOR radio navigation aid or, if not available, on the aerodrome/heliport reference point;

(4) notes concerning correction for low temperature effect, as applicable;

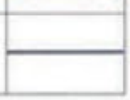
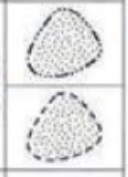
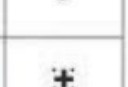
(vi) communications procedures including call sign(s) and channel(s) of the ATC unit(s) concerned.

Appendix C - Chart Symbols

TOPOGRAPHY

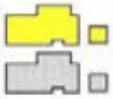
1	Contours	
2	Approximate contours	
3	Relief shown by hachures	
4	Bluff, cliff or escarpment	
5	Lava flow	
6	Sand dunes	
7	Sand area	
8	Gravel	
9	Levee or esker (Alternative)	
10	Unusual land features appropriately labelled	
	Active volcano	
11	Mountain pass	
12	Highest elevation on chart (Alternative)	17456 / .17456
13	Spot elevation	.6397 .8975
14	Spot elevation (of doubtful accuracy)	.6370?
15	Coniferous trees	
16	Other trees	
17	Palms	
18	Areas not surveyed for contour information or relief data incomplete	Caution

HYDROGRAPHY

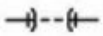
19	Shore line (reliable)	
20	Shore line (unreliable)	
21	Tidal flats	
22	Coral reefs and ledges	
23	Large river (perennial)	
24	Small river (perennial)	
25	Rivers and streams (non-perennial) (Alternative)	
26	Rivers and streams (unsurveyed)	
27	Rapids	
28	Falls	
29	Canal	
30	Abandoned canal *Note.— Dry canal having landmark value.*	
31	Lakes (perennial)	
32	Lakes (non-perennial) (Alternative)	
33	Salt lake	
34	Salt pans (evaporator)	
35	Swamp	
36	Rice field (Alternative)	
37	Spring, well or water hole — perennial	
	intermittent	
38	Reservoir	
39	Dry lake bed (Alternative)	
40	Wash (Alternative)	
41	Shoals	
42	Glaciers and ice caps	
43	Danger line (2 m or one fathom line)	
44	Charted isolated rock	
45	Rock awash	
46	Unusual water features appropriately labelled	

CULTURE

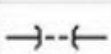
BUILT-UP AREAS

47	City or large town	
48	Town	
49	Village	
50	Buildings	

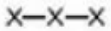
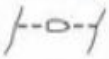
RAILROADS

51	Railroad (single track)	
52	Railroad (two or more tracks)	
53	Railroad (under construction)	
54	Railroad bridge	
55	Railroad tunnel	
56	Railroad station	

HIGHWAYS AND ROADS

57	Dual highway	
58	Primary road	
59	Secondary road	
60	Trail	
61	Road bridge	
62	Road tunnel	

MISCELLANEOUS

63	Boundaries (international)	
64	Outer boundaries	
65	Fence	
66	Telegraph or telephone line (when a landmark)	
67	Dam	
68	Ferry	

MISCELLANEOUS (Cont.)

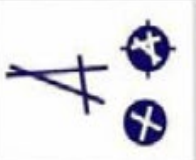
69	Pipeline	
70	Oil or gas field	
71	Tank farms	
72	Nuclear power station	
73	Coast guard station	
74	Lookout tower	
75	Mine	
76	Forest ranger station	
77	Race track or stadium	
78	Ruins	
79	Fort	
80	Church	
81	Mosque	
82	Pagoda	
83	Temple	

AERODROMES

84	Civil	Land	
85	Civil	Water	
86	Military	Land	
87	Military	Water	

88	Joint civil and military	Land	
89	Joint civil and military	Water	
90	Emergency aerodrome or aerodrome with no facilities		
91	Abandoned or closed aerodrome		

92	Sheltered anchorage	
93	Aerodrome for use on charts on which aerodrome classification is not required e.g. Enroute Charts	
94	Heliport *Note.— Aerodrome for the exclusive use of helicopters*	

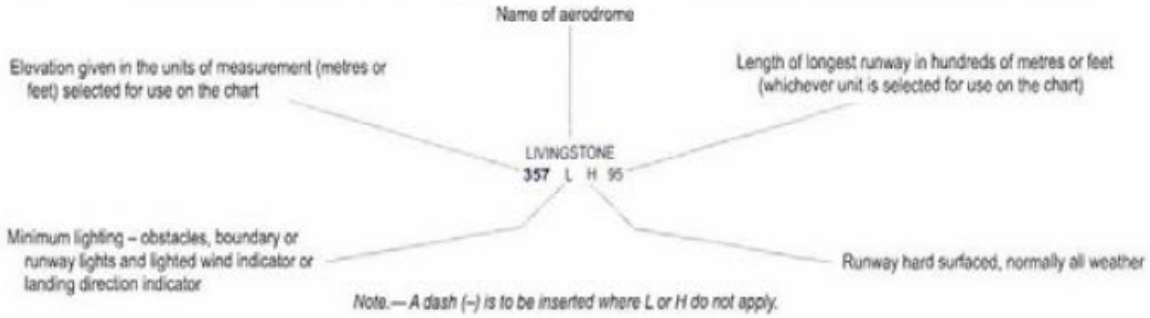
95	*Note.— Where required by the function of the chart, the runway pattern of the aerodrome may be shown in lieu of the aerodrome symbol, for example:*	

AERODROMES (Cont.)

AERODROME DATA IN ABBREVIATED FORM WHICH MAY BE IN ASSOCIATION WITH AERODROME SYMBOLS

(Reference: 16.9.2.2 and 17.9.2.2)

96



Note.— A dash (–) is to be inserted where L or H do not apply.

AERODROME SYMBOLS FOR APPROACH CHARTS

97	Aerodromes affecting the traffic pattern on the aerodrome on which the procedure is based	
98	The aerodrome on which the procedure is based	

RADIO NAVIGATION AIDS*

99	Basic radio navigation aid symbol *Note.— This symbol may be used with or without a box to enclose the data.*		
100	Non-directional radio beacon	NDB	
101	VHF omnidirectional radio range	VOR	
102	Distance measuring equipment	DME	
103	Collocated VOR and DME radio navigation aids	VOR/DME	
104	DME distance	Distance in kilometres (nautical miles) to DME → 15 km Identification of radio navigation aid → KAV	
105	VOR radial	Radial bearing from, and identification of, VOR	R 090 KAV
106	UHF tactical air navigation aid	TACAN	

107	Collocated VOR and TACAN radio navigation aids	VORTAC	
108	Instrument landing system	ILS	PLAN VIEW  Electronic  FRONT COURSE BACK COURSE PROFILE  Electronic  GLIDE PATH
109	Radio marker beacon	Elliptical	
		Bone Shape	

Note.— Marker beacon may be shown by outline, or stipple, or both.

110	Compass rose To be orientated on the chart in accordance with the alignment of the station (normally Magnetic North)		Compass rose to be used as appropriate in combination with the following symbols: VOR  VOR/DME  TACAN  VORTAC 

Note.— Additional points of compass may be added as required.

**Note.— Guidance material on the presentation of radio navigation aid data is given in the Aeronautical Chart Manual (Doc 8697).*

AIR TRAFFIC SERVICES

111	Flight information region	FIR	
112	Aerodrome traffic zone	ATZ	
113	Control area Airway Controlled route	CTA AWY	Alternative
114	Uncontrolled route		
115	Advisory airspace	ADA	
116	Control zone	CTR	

117	Air defence identification zone	ADIZ	ADIZ
118	Advisory route	ADR	Alternative
119	Visual flight path	compulsory with radio communication requirement	R
		compulsory, without radio communication requirement	R
		recommended	
120	Scale-break (on ATS route)		Alternative

121 Reporting and fly-by/flyover functionality	On request fly-by	Compulsory fly-by	On request flyover	Compulsory flyover
VFR reporting point	△	▲	△	▲
Intersection INT	△	▲	△	▲
VORTAC				
TACAN				
VOR				
VOR/DME				
NDB				
Waypoint WPT				

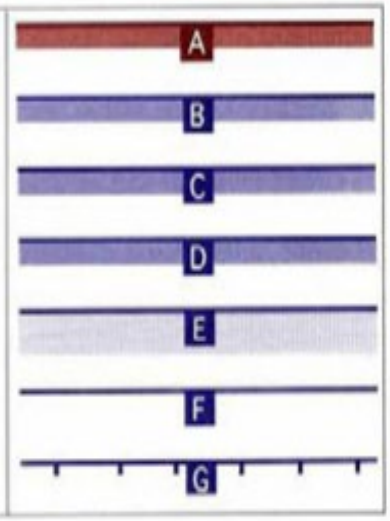
Note.— See 2.4.4 and 2.4.5.

122	Change-over point COP To be superimposed on the appropriate route symbol at right angles to the route	26 / 36	123	ATS/MET reporting point MRP	Compulsory On request	124	Final approach fix FAF	

AIR TRAFFIC SERVICES *(cont.)*

125	Altitudes/flight levels	Altitude/flight level "window"	17 000 10 000	FL 220 10 000
		"At or above" altitude/flight level	7 000	FL 70
		"At or below" altitude/flight level	5 000	FL 50
		"Mandatory" altitude/flight level	3 000	FL 30
		"Recommended" procedure altitude/flight level	5 000	FL 50
		"Expected" altitude	Expect 5 000	Expect FL 50
	Note.— For use only on SID and STAR charts. Not intended for depiction of minimum obstacle clearance altitude.			

AIRSPACE CLASSIFICATIONS

126	Airspace classifications	

Aeronautical data in abbreviated form to be used in association with airspace classification symbols:

127	Alternative	TMA DONLON 119.1 C 200m AGL - FL 245 Type — Name or call sign — Radio frequency(ies) — Airspace classification — Vertical limits 

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			

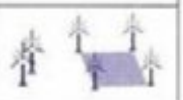
OBSTACLES

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 (italics) — 52 — (15) — Height above specified datum (upright type in parentheses)	

MISCELLANEOUS

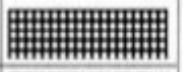
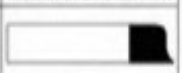
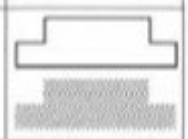
137	Prominent transmission line	
138	Isogonic line or isogonal	
139	Ocean station vessel (normal position)	

140	Wind turbine – unlighted and lighted	
141	Wind turbines – minor group and group in major area, lighted	

VISUAL AIDS

142	Marine light *Note 2.– Characteristics are to be indicated as follows:*	F	*Note 1.– Marine alternating lights are red and white unless otherwise indicated. Marine lights are white unless colours are stated.* Alt Alternating; B Blue; F Fixed; 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	
146	Pierced steel plank or steel mesh runway	
147	Unpaved runway	
148	Stopway SWY	
149	Taxiways and parking areas	
150	Helicopter alighting area on an aerodrome	Ⓗ
151	Aerodrome reference point ARP	⊕
152	VOR check-point	⊖
153	Runway visual range (RVR) observation site	▷

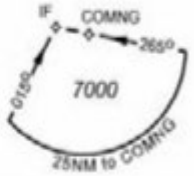
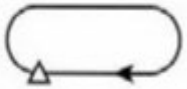
154	Point light	● ○
155	Obstacle light	✳
156	Landing direction indicator (lighted)	
157	Landing direction indicator (unlighted)	T
158	Stop bar	▪▪▪
159	Runway-holding position Pattern A Pattern B *Note.– For application, see Annex 14, Volume I, 5.2.10.*	
160	Intermediate holding position *Note.– For application, see Annex 14, Volume I, 5.2.11.*	
161	Hot spot *Note.– Hot spot location to be circled.*	

SYMBOLS FOR AERODROME OBSTACLE CHARTS - TYPE A, B AND C

		Plan	Profile
162	Tree or shrub	✳	Identification number ①
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)