KINGDOM OF BAHRAIN
Ministry of Transportation and Telecommunications

مملكة البحرين
وزارة المواصلات والاتصالات

AIR NAVIGATION TECHNICAL REGULATIONS VOLUME III PART 15

AERONAUTICAL INFORMATION SERVICES

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A. FOREWORD

In accordance with Annexes to the Chicago Convention (1944)[1] and other international obligations the Civil Aviation Affairs of the Kingdom of Bahrain (CAA) is promulgating regulations which promote safety. The ICAO Council, on 13 April 1948, adopted a resolution inviting the attention of Contracting States to the desirability of using in their own national regulations, as far as is practicable, the precise language of those ICAO Standards that are of a regulatory character and also of indicating departures from the Standards, including any additional national regulations that are important for the safety or regularity of air navigation. Wherever possible, the provisions of the Annexes to the Chicago Convention have been written in such a way as would facilitate incorporation, without major textual changes, into national legislation.[2]

Therefore, the Regulation at hand reproduces the provision of ICAO Annex 15 “Aeronautical Information Services” unchanged wherever possible and adapts it to the needs of the Kingdom of Bahrain wherever necessary.

The text does not take into account any (existing or planned) difference applicable in the Kingdom of Bahrain. According to Art. 38 of the Chicago Convention, the Kingdom of Bahrain is obliged to communicate any difference between their national regulations and practices and the related ICAO Standards and Recommended Practices to ICAO and to publish in the AIP.

Any reference in the text to ICAO documents may be substituted by a reference to any existing CAA document (Manual, Instruction, Handbook) covering the same matters.

Hereinafter, wherever a reference is made to an ICAO Annex followed by a number, it shall refer to the Annex to the Chicago Convention (1944) corresponding to that number.

[1] Hereinafter: ICAO Annex (number).
[2] ICAO Annex 11, Foreword, p. (viii).

B. Remarks

To avoid any misunderstanding within this document:

1. The words ‘shall’ and ‘must’ indicate that compliance is compulsory.

2. The word ‘should’ indicates a recommendation. It does not mean that the compliance is optional but rather that, where insurmountable difficulties exist, the CAA may accept an alternative means of compliance, and provided that an acceptable safety assurance from the authority shows that the safety requirements will not be reduced below that intended by the requirement.

3. The word ‘can’ or ‘may’ is used in a permissive sense to state authority or permission to do the act prescribed.

4. The word ‘will’ is used to express the future.

5. The “Notes” contained in the ICAO Annex 15 have not been included into the regulatory part of this Regulation. They have no regulatory function and, therefore, they may form a part of the handbooks, manuals etc. and are explanatory only.

CHAPTER 1

DEFINITIONS, COMMON REFERENCE SYSTEMS FOR AIR NAVIGATION, MISCELLANEOUS SPECIFICATIONS

1.1 Definitions

When the following terms are used in this Regulation for aeronautical information services, they have the following meanings:

***Aerodrome*.** A defined area on land or water (including any buildings, installations and equipment) intended to be used either wholly or in part for the arrival, departure and surface movement of aircraft.

Aerodrome mapping data (AMD). Data collected for the purpose of compiling aerodrome mapping information.

Note.— Aerodrome mapping data are collected for purposes that include the improvement of the user's situational awareness, surface navigation operations, training, charting and planning.

Aerodrome mapping database (AMDB). A collection of aerodrome mapping data organized and arranged as a structured data set.

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

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

Aeronautical fixed service (AFS). 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. Information resulting from the assembly, analysis and formatting of aeronautical data.

Aeronautical Information Circular (AIC). A notice containing information that does not qualify for the origination of a NOTAM or for inclusion in the AIP, but which relates to flight safety, air navigation, technical, administrative or legislative matters.

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

***Aeronautical information product*.** Aeronautical data and aeronautical information provided either as digital data sets or as a standardized presentation in paper or electronic media. Aeronautical information products include:

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

— Aeronautical Information Circulars (AIC);

— Aeronautical charts;

— NOTAM; and

— Digital data sets.

Note.—Aeronautical information products are intended primarily to satisfy international requirements for the exchange of aeronautical information.

Aeronautical Information Publication (AIP). A publication issued by or with the authority of a State and containing aeronautical information of a lasting character essential to air navigation.

Aeronautical information service (AIS). A service established within the defined area of coverage responsible for the provision of aeronautical data and aeronautical information necessary for the safety, regularity and efficiency of air navigation.

AIP Amendment. Permanent changes to the information contained in the AIP.

AIP Supplement. Temporary changes to the information contained in the AIP which are provided by means of special pages.

AIRAC. An acronym (aeronautical information regulation and control) signifying a system aimed at advance notification, based on common effective dates, of circumstances that necessitate significant changes in operating practices.

Air defence identification zone (ADIZ). Special designated airspace of defined dimensions within which aircraft are required to comply with special identification and/or reporting procedures additional to those related to the provision of air traffic services (ATS).

Air traffic management (ATM). The dynamic, integrated management of air traffic and airspace (including air traffic services, airspace management and air traffic flow management) — safely, economically and efficiently — through the provision of facilities and seamless services in collaboration with all parties and involving airborne and ground-based functions.

Annex. Reference to any “Annex” refers to ICAO Annexes to the Chicago Convention (1944).

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

Area navigation (RNAV). A method of navigation which permits aircraft operation on any desired flight path within the coverage of ground- or space-based navigation aids or within the limits of the capability of self-contained aids, or a combination of these.

Note.— Area navigation includes performance-based navigation as well as other operations that do not meet the definition of performance-based navigation.

ASHTAM. A special series NOTAM notifying by means of a specific format change in activity of a volcano, a volcanic eruption and/or volcanic ash cloud that is of significance to aircraft operations.

Assemble. 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.

* All ISO Standards are listed at the end of this chapter.

ATS surveillance service. Term used to indicate a service provided directly by means of an ATS surveillance system.

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

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

Automatic dependent surveillance — broadcast (ADS-B). A means by which aircraft, aerodrome vehicles and other objects can automatically transmit and/or receive data such as identification, position and additional data, as appropriate, in a broadcast mode via a data link.

Automatic dependent surveillance — contract (ADS-C). A means by which the terms of an ADS-C agreement will be exchanged between the ground system and the aircraft, via a data link, specifying under what conditions ADS-C reports would be initiated, and what data would be contained in the reports.

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

Automatic terminal information service (ATIS). The automatic provision of current, routine information to arriving and departing aircraft throughout 24 hours or a specified portion thereof: *Data link-automatic terminal information service (D-ATIS).* The provision of ATIS via data link. *Voice-automatic terminal information service (Voice-ATIS).* The provision of ATIS by means of continuous and repetitive voice broadcasts.

Bare Earth. Surface of the Earth including bodies of water and permanent ice and snow, and excluding vegetation and manmade objects.

CAA. The Civil Aviation Affairs of the Kingdom of Bahrain.

Calendar. Discrete temporal reference system that provides the basis for defining temporal position to a resolution of one day (ISO 19108*).

Canopy. Bare Earth supplemented by vegetation height.

Confidence level. 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.

Controller-pilot data link communications (CPDLC). A means of communication between controller and pilot, using data link for ATC communications.

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

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

Danger area. An airspace of defined dimensions within which activities dangerous to the flight of aircraft may exist at specified times.

Data accuracy**.** A degree of conformance between the estimated or measured value and the true value.

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

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

Data Integrity (assurance level). A degree of assurance that an aeronautical data and its value has not been lost or altered since the origination or authorized amendment.

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

Data product specification. 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 quality. A degree or level of confidence that the data provided meet the requirements of the data user in terms of accuracy, resolution, integrity (or equivalent assurance level), traceability, timeliness, completeness and format.

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

Data set. Identifiable collection of data (ISO 19101*).

Data set series. Collection of data sets sharing the same product specification (ISO 19115*).

Data timeliness**.** The degree of confidence that the data is applicable to the period of its intended use.

Data traceability**.** 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.

Datum. Any quantity or set of quantities that may serve as a reference or basis for the calculation of other quantities (ISO 19104*).

Digital Elevation Model (DEM). The representation of terrain surface by continuous elevation values at all intersections of a defined grid, referenced to common datum.

Note.— Digital Terrain Model (DTM) is sometimes referred to as DEM.

Direct transit arrangements. Special arrangements approved by the public authorities concerned by which traffic which is pausing briefly in its passage through the Contracting State may remain under their direct control.

Ellipsoid height (Geodetic height). The height related to the reference ellipsoid, measured along the ellipsoidal outer normal through the point in question.

Feature. Abstraction of real world phenomena (ISO 19101*).

Feature attribute. Characteristic of a feature (ISO 19101*).

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

Feature operation. Operation that every instance of a feature type may perform (ISO 19110*).

Note.— An operation upon the feature type dam is to raise the dam. The result of this operation is to raise the level of water in the reservoir.

Feature relationship. Relationship that links instances of one feature type with instances of the same or a different feature type (ISO 19101*).

Feature type. Class of real world phenomena with common properties (ISO 19110*).

Note.— In a feature catalogue, the basic level of classification is the feature type.

Geodesic distance. The shortest distance between any two points on a mathematically defined ellipsoidal surface.

Geodetic datum. A minimum set of parameters required to define location and orientation of the local reference system with respect to the global reference system/frame.

Geoid. The equipotential surface in the gravity field of the Earth which coincides with the undisturbed mean sea level (MSL) extended continuously through the continents.

Note.— The geoid is irregular in shape because of local gravitational disturbances (wind tides, salinity, current, etc.) and the direction of gravity is perpendicular to the geoid at every point.

Geoid undulation. The distance of the geoid above (positive) or below (negative) the mathematical reference ellipsoid.

Note.— In respect to the World Geodetic System — 1984 (WGS-84) defined ellipsoid, the difference between the WGS-84 ellipsoidal height and orthometric height represents WGS-84 geoid undulation.

Gregorian calendar. Calendar in general use; first introduced in 1582 to define a year that more closely approximates the tropical year than the Julian calendar (ISO 19108*).

Note.— In the Gregorian calendar, common years have 365 days and leap years 366 days divided into twelve sequential months.

Height. The vertical distance of a level, point or an object considered as a point, measured from a specific datum.

Heliport. An aerodrome or a defined area on a structure intended to be used wholly or in part for the arrival, departure and surface movement of helicopters.

Human Factors principles. Principles which apply to aeronautical design, certification, training, operations and maintenance and which seek safe interface between the human and other system components by proper consideration to human performance.

Integrity classification (aeronautical data). Classification based upon the potential risk resulting from the use of corrupted data. Aeronautical data are classified as:

a) *routine data:* there is a very low probability when using corrupted routine data that the continued safe flight and landing of an aircraft would be severely at risk with the potential for catastrophe;

b) *essential data:* there is a low probability when using corrupted essential data that the continued safe flight and landing of an aircraft would be severely at risk with the potential for catastrophe; and

c) *critical data:* there is a high probability when using corrupted critical data that the continued safe flight and landing of an aircraft would be severely at risk with the potential for catastrophe.

International airport. Any airport designated by the CAA in whose territory it is situated as an airport of entry and departure for international air traffic, where the formalities incident to customs, immigration, public health, animal and plant quarantine and similar procedures are carried out.

International NOTAM office (NOF). An office designated by a State for the exchange of NOTAM internationally.

Logon address. A specified code used for data link logon to an ATS unit.

Manoeuvring area. That part of an aerodrome to be used for the take-off, landing and taxiing of aircraft, excluding aprons.

Metadata. Data about data (ISO 19115*).

Note.— A structured description of the content, quality, condition or other characteristics of data.

Minimum en-route altitude (MEA). The altitude for an en-route segment that provides adequate reception of relevant navigation facilities and ATS communications, complies with the airspace structure and provides the required obstacle clearance.

Minimum obstacle clearance altitude (MOCA). The minimum altitude for a defined segment of flight that provides the required obstacle clearance.

Movement area. That part of an aerodrome to be used for the take-off, landing and taxiing of aircraft, consisting of the manoeuvring area and the apron

Navigation specification. A set of aircraft and flight crew requirements needed to support performance-based navigation operations within a defined airspace. There are two kinds of navigation specifications:

Required navigation performance (RNP) specification. A navigation specification based on area navigation that includes the requirement for performance monitoring and alerting, designated by the prefix RNP, e.g. RNP 4, RNP APCH.

Area navigation (RNAV) specification. A navigation specification based on area navigation that does not include the requirement for performance monitoring and alerting, designated by the prefix RNAV, e.g. RNAV 5, RNAV 1.

Note 1.— The Performance-based Navigation (PBN) Manual *(Doc 9613), Volume II, contains detailed guidance on navigation specifications.*

Note 2.— The term RNP, previously defined as "a statement of the navigation performance necessary for operation within a defined airspace", has been removed from this Annex as the concept of RNP has been overtaken by the concept of PBN. The term RNP in this Regulation is now solely used in the context of navigation specifications that require performance monitoring and alerting, e.g. RNP 4 refers to the aircraft and operating requirements, including a 4 NM lateral performance with on-board performance monitoring and alerting that are detailed in ICAO Doc 9613.

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

NOTAM. A notice distributed by means of telecommunication containing information concerning the establishment, condition or change in any aeronautical facility, service, procedure or hazard, the timely knowledge of which is essential to personnel concerned with flight operations.

Obstacle. All fixed (whether temporary or permanent) and mobile objects, or parts thereof, that:

a) are located on an area intended for the surface movement of aircraft; or

b) extend above a defined surface intended to protect aircraft in flight; or

c) stand outside those defined surfaces and that have been assessed as being a hazard to air navigation.

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

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

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

Performance-based communication (PBC). Communication based on performance specifications applied to the provision of air traffic services.

Note.— An RCP specification includes communication performance requirements that are allocated to system components in terms of the communication to be provided and associated transaction time, continuity, availability, integrity, safety and functionality needed for the proposed operation in the context of a particular airspace concept.

Performance-based navigation (PBN). Area navigation based on performance requirements for aircraft operating along an

ATS route, on an instrument approach procedure or in a designated airspace.

Note.— Performance requirements are expressed in navigation specifications (RNAV specification, RNP specification) in terms of accuracy, integrity, continuity, availability and functionality needed for the proposed operation in the context of a particular airspace concept.

***Performance-based surveillance (PBS)**. Surveillance based on performance specifications applied to the provision of air traffic services.*

Note.— An RSP specification includes surveillance performance requirements that are allocated to system components in terms of the surveillance to be provided and associated data delivery time, continuity, availability, integrity, accuracy of the surveillance data, safety and functionality needed for the proposed operation in the context of a particular airspace concept.

Portrayal. Presentation of information to humans (ISO 19117*).

Position (geographical). 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.

Post spacing. Angular or linear distance between two adjacent elevation points.

Precision. 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.

Pre-flight information bulletin (PIB). A presentation of current NOTAM information of operational significance, prepared prior to flight.

Prohibited area. An airspace of defined dimensions, above the land areas or territorial waters of a State, within which the flight of aircraft is prohibited.

Quality. Degree to which a set of inherent characteristics fulfils requirements (ISO 9000*).

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

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

Quality assurance. Part of quality management focused on providing confidence that quality requirements will be fulfilled (ISO 9000*).

Quality control. Part of quality management focused on fulfilling quality requirements (ISO 9000*).

Quality management. Coordinated activities to direct and control an organization with regard to quality (ISO 9000*).

Radio navigation service. A service providing guidance information or position data for the efficient and safe operation of aircraft supported by one or more radio navigation aids.

***Required communication performance (RCP) specification*.** A set of requirements for air traffic service provision and associated ground equipment, aircraft capability, and operations needed to support performance-based communication.

Required surveillance performance (RSP) specification. A set of requirements for air traffic service provision and associated ground equipment, aircraft capability, and operations needed to support performance-based surveillance.

Requirement. Need or expectation that is stated, generally implied or obligatory (ISO 9000*).

Note 1.— "Generally implied" means that it is custom or common practice for the organization, its customers and other interested parties, that the need or expectation under consideration is implied.

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

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

Note 4.— Requirements can be generated by different interested parties.

Resolution. A number of units or digits to which a measured or calculated value is expressed and used.

Restricted area. An airspace of defined dimensions, above the land areas or territorial waters of a State, within which the flight of aircraft is restricted in accordance with certain specified conditions.

Route stage. A route or portion of a route flown without an intermediate landing.

SNOWTAM. A special series NOTAM notifying the presence or removal of hazardous conditions due to snow, ice, slush or standing water associated with snow, slush and ice on the movement area, by means of a specific format.

State. The Kingdom of Bahrain.

Station declination. An alignment variation between the zero degree radial of a VOR and true north, determined at the time the VOR station is calibrated.

Terrain. The surface of the Earth containing naturally occurring features such as mountains, hills, ridges, valleys, bodies of water, permanent ice and snow, and excluding obstacles.

Traceability. Ability to trace the history, application or location of that which is under consideration (ISO 9000*).

Note.— When considering product, traceability can relate to:

— the origin of materials and parts;

— the processing history; and

— the distribution and location of the product after delivery.

Validation. Confirmation, through the provision of objective evidence, that the requirements for a specific intended use or application have been fulfilled (ISO 9000*).

Verification. Confirmation, through the provision of objective evidence, that specified requirements have been fulfilled (ISO 9000*).

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

VOLMET. Meteorological information for aircraft in flight.

Data link-VOLMET (D-VOLMET). Provision of current aerodrome routine meteorological reports (METAR) and aerodrome special meteorological reports (SPECI), aerodrome forecasts (TAF), SIGMET, special air-reports not covered by a SIGMET and, where available, AIRMET via data link.

VOLMET broadcast. Provision, as appropriate, of current METAR, SPECI, TAF and SIGMET by means of continuous and repetitive voice broadcasts.

1.2 Common Reference Systems for Air Navigation

1.2.1 Horizontal reference system

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

Note 1.— Comprehensive guidance material concerning WGS-84 is contained in the World Geodetic System — 1984 (WGS-84) Manual *(Doc 9674)*.

1.2.1.2 In precise geodetic applications and some air navigation applications, temporal changes in the tectonic plate motion and tidal effects on the Earth's crust shall be modelled and estimated. To reflect the temporal effect, an epoch shall be included with any set of absolute station coordinates.

Note 1.— The epoch of the WGS-84 (G873) reference frame is 1997.0 while the epoch of the latest updated WGS-84 (G1150) reference frame, which includes plate motion model, is 2001.0. (G indicates that the coordinates were obtained through Global Positioning System (GPS) techniques, and the number following G indicates the GPS week when these coordinates were implemented in the United States of America's National Geospatial-Intelligence Agency's (NGA's) precise ephemeris estimation process.)

Note 2.— The set of geodetic coordinates of globally distributed permanent GPS tracking stations for the most recent realization of the WGS-84 reference frame (WGS-84 (G1150)) is provided in Doc 9674. For each permanent GPS tracking station, the accuracy of an individually estimated position in WGS-84 (G1150) has been in the order of 1 cm.

Note 3.— Another precise worldwide terrestrial coordinate system is the International Earth Rotation Service (IERS) Terrestrial Reference System (ITRS), and the realization of ITRS is the IERS Terrestrial Reference Frame (ITRF). Guidance material regarding the ITRS is provided in Appendix C of Doc 9674. The most current realization of the WGS-84 (G1150) is referenced to the ITRF 2000 epoch. The WGS-84 (G1150) is consistent with the ITRF 2000 and in practical realization the difference between these two systems is in the one to two centimetre range worldwide, meaning WGS-84 (G1150) and ITRF 2000 are essentially identical.

1.2.2 Vertical reference system

1.2.2.1 Mean sea level (MSL) datum shall be used as the vertical reference system for international air navigation.

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

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

1.2.2.2 The Earth Gravitational Model — 1996 (EGM-96) shall be used by international air navigation as the global gravity model.

1.2.2.3 At those geographical positions where the accuracy of EGM-96 does not meet the accuracy requirements for elevation and geoid undulation on the basis of EGM-96 data, regional, national or local geoid models containing high resolution (short wavelength) gravity field data shall be developed and used. When a geoid model other than the EGM-96 model is used, a description of the model used, including the parameters required for height transformation between the model and EGM-96, shall be provided in the Aeronautical Information Publication (AIP).

Note.— Specifications governing determination and reporting (accuracy of field work and data integrity) of elevation and geoid undulation at specific positions at aerodromes/heliports are given in PANS-AIM (Doc 10066), Appendix 1.

1.2.3 Temporal reference system

1.2.3.1 For international civil aviation, the Gregorian calendar and Coordinated Universal Time (UTC) shall be used as the temporal reference system.

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

Note 2.— Coordinated Universal Time (UTC) is a time scale maintained by the Bureau International de l'Heure (BIH) and the IERS and forms the basis of a coordinated dissemination of standard frequencies and time signals.

Note 3.— See Attachment D of Annex 5 for guidance material relating to UTC.

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

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

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

1.3 Miscellaneous Specifications

1.3.1 Aeronautical information products intended for international distribution shall include English text for those parts expressed in plain language.

1.3.2 Place names shall be spelt in conformity with local usage, transliterated, when necessary, into the ISO-Basic Latin alphabet.

1.3.3 Units of measurement used in the origination, processing and distribution of aeronautical data and aeronautical information shall be consistent with the tables contained in ANTR Volume III Part 5 —" Units of Measurement".

1.3.4 ICAO abbreviations shall be used in the aeronautical information products whenever they are appropriate and their use will facilitate distribution of aeronautical data and aeronautical information.

** ISO Standard*

9000 — Quality Management Systems — Fundamentals and Vocabulary

19101 — Geographic information — Reference model

19104 — Geographic information — Terminology

19108 — Geographic information — Temporal schema

19109 — Geographic information — Rules for application schema

19110 — Geographic information — Feature cataloguing schema

19115 — Geographic information — Metadata

19117 — Geographic information — Portrayal

19131 — Geographic information — Data product specification

CHAPTER 2
RESPONSIBILITIES AND FUNCTIONS

2.1 State Responsibilities

2.1.1 The Bahrain CAA shall:
a) provide an aeronautical information service; or
b) agree with one or more other Contracting State(s) for the provision of a joint service; or
c) delegate the authority for the provision of the service to a non-governmental agency, provided the provisions of this Regulation are adequately met.

2.1.2 The CAA shall ensure that the provision of aeronautical data and aeronautical information covers its own territory and those areas over the high seas for which it is responsible for the provision of air traffic services.

2.1.3 The CAA shall remain responsible for the aeronautical data and aeronautical information provided in accordance with 2.1.2. Aeronautical data and aeronautical information provided for and on behalf of the Kingdom of Bahrain shall clearly indicate that they are provided under the authority of that State, irrespective of the format in which they are provided. .

2.1.4 The CAA shall ensure that the aeronautical data and aeronautical information provided are of required quality in accordance with 3.3.

2.1.5 The CAA may require that formal arrangements are established between originators of aeronautical data and aeronautical information and the aeronautical information service in relation to the timely and complete provision of aeronautical data and aeronautical information.

Note.— The scope of aeronautical data and aeronautical information that would be the subject of formal arrangements is specified in Chapter 4.

2.2 AIS Responsibilities and Functions

2.2.1 The aeronautical information service shall ensure that aeronautical data and aeronautical information necessary for the safety, regularity and efficiency of air navigation are made available in a form suitable for the operational requirements of the ATM community, including:
a) those involved in flight operations, including flight crews, flight planning and flight simulators; and
b) the air traffic services unit responsible for flight information service and the services responsible for pre-flight information.

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

2.2.2 The aeronautical information service shall receive, collate or assemble, edit, format, publish/store and distribute aeronautical data and aeronautical information concerning the entire territory of the Kingdom of Bahrain as well as those areas over the high seas in which the State is responsible for the provision of air traffic services. Aeronautical data and aeronautical information shall be provided as aeronautical information products.

Note.— An aeronautical information service may include origination functions.

2.2.3 Where 24-hour service is not provided, service shall be available during the whole period an aircraft is in flight in the area of responsibility of an aeronautical information service, plus a period of at least two hours before and after such a period. The service shall also be available at such other time as may be requested by an appropriate ground organization.

2.2.4 An aeronautical information service shall, in addition, obtain aeronautical data and aeronautical information to enable it to provide pre-flight information service and to meet the need for in-flight information:
a) from the aeronautical information services of other States;
b) from other sources that may be available.

Note.— One such source is the subject of a provision in 5.6
.
2.2.5 Aeronautical data and aeronautical information obtained under 2.2.4 a) shall, when distributed, be clearly identified as having the authority of the State of Origin.

2.2.6 Aeronautical data and aeronautical information obtained under 2.2.4 b) shall, if possible, be verified before distribution and if not verified shall, when distributed, be clearly identified as such.

2.2.7 the aeronautical information service shall promptly make available to the aeronautical information services 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 2.2.1.

2.3 Exchange of Aeronautical Data and Aeronautical Information

2.3.1 CAA shall designate the office to which all elements of the aeronautical information products provided by other States shall be addressed. Such an office shall be qualified to deal with requests for aeronautical data and aeronautical information provided by other States.

2.3.2 Formal arrangements shall be established between those parties providing aeronautical data and aeronautical information on behalf of the CAA and their users in relation to the provision of the service.

2.3.3 Where more than one international NOTAM office is designated within the Kingdom, the extent of responsibility and the territory covered by each office shall be defined.

2.3.4 An AIS shall arrange, as necessary, to satisfy operational requirements for the issuance and receipt of NOTAM distributed by telecommunication.

2.3.5 Wherever practicable, direct contact between AIS shall be established in order to facilitate the international exchange of aeronautical data and aeronautical information.

2.3.6 Except as provided in 2.3.8, one copy of each of the following aeronautical information products (where available) that have been requested by the AIS of a Contracting State shall be made available by the originating State and provided in the mutually-agreed form(s), without charge, even where authority for publication/storage and distribution has been delegated to a non-governmental agency:

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

b) Aeronautical Information Circulars (AIC);

c) NOTAM; and

d) Aeronautical Charts.

2.3.7 The exchange of more than one copy of the elements of the aeronautical information products and other air navigation documents, including those containing air navigation legislation and regulations, shall be subject to bilateral agreement between the participating Contracting States and entities.

Note.— The intention is that States are able to access foreign data for the purposes specified in 2.2.4.

2.3.9 The procurement of aeronautical data and aeronautical information, including the elements of aeronautical information products, and other air navigation documents, including those containing air navigation legislation and regulations, by States other than Contracting States and by other entities shall be subject to separate agreement between the participating States and entities.

2.3.10 Globally interoperable aeronautical data and information exchange models shall be used for the provision of data sets.

Note 1.— Specifications concerning the globally interoperable aeronautical information and data exchange models are contained in the PANS-AIM (Doc 10066).
Note 2.— Guidance on the globally interoperable aeronautical information and data exchange models may be found in Doc 8126.

2.4 Copyright

2.4.1 Any product of CAA AIM which has been granted copyright protection and provided to another State in accordance with 2.3 shall only be made available to a third party on the condition that the third party is made aware that the product is copyright protected and provided that it is appropriately annotated that the product is subject to copyright by the originating State.

2.4.2 When aeronautical information and aeronautical data is provided to a State in accordance with 2.3.8, the receiving State shall not provide digital data sets of the providing State to any third party without the consent of the providing State.

2.5 Cost Recovery

2.5.1 The CAA may recover the cost of collecting and compiling aeronautical data and aeronautical information through airports and air navigation services charges, or other charges as appropriate.

CHAPTER 3
AERONAUTICAL INFORMATION MANAGEMENT

3.1 Information management requirements

The information management resources and processes established by an aeronautical information service shall be adequate to ensure the timely collection, processing, storing, integration, exchange and delivery of quality-assured aeronautical data and aeronautical information within the ATM system.

3.2 Data Quality Specifications

3.2.1 Data Accuracy
The order of accuracy for aeronautical data shall be in accordance with its intended use.
Note- Specifications concerning the order of accuracy (including confidence level) for aeronautical data are contained in the PANS-AIM (Doc 10066), Appendix 1.

3.2.2 Data Resolution
The order of resolution of aeronautical data shall be commensurate with the actual data accuracy.

Note 1.— Specifications concerning the resolution of the aeronautical data are contained in the PANS-AIM (Doc 10066), Appendix 1.
Note 2.— The resolution of the data contained in the database may be the same or finer than the publication resolution.

3.2.3 Data Integrity
3.2.3.1 The integrity of aeronautical data shall be maintained throughout the data process from origination to distribution to the next intended user.
Note .— Specifications concerning the integrity classification related to aeronautical data are contained in the PANS-AIM (Doc 10066), Appendix 1.
3.2.3.2 Based on the applicable integrity classification, procedures shall be put in place in order to:
a) for routine data: avoid corruption throughout the processing of the data;
b) for essential data: assure corruption does not occur at any stage of the entire process and include additional processes as needed to address potential risks in the overall system architecture to further assure data integrity at this level; and
c) for critical data: assure corruption does not occur at any stage of the entire process and include additional integrity assurance processes to fully mitigate the effects of faults identified by thorough analysis of the overall system architecture as potential data integrity risks.

3.2.4 Data Traceability
3.2.4.1 Traceability of aeronautical data shall be ensured and retained as long as the data is in use.

3.2.5 Data Timeliness
3.2.5.1 Timeliness shall be ensured by including limits on the effective period of the data elements.
Note 1.— These limits may be associated with individual data elements or data sets.

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

3.2.6 Data Completeness
3.2.6.1 Completeness of the aeronautical data shall be ensured in order to support the intended use.

3.2.7 Data Format
3.2.7.1 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.

3.3 Aeronautical data and aeronautical information validation and verification

3.3.1 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.

3.3.2 AIM shall establish verification and validation procedures which ensure that upon receipt of aeronautical data and aeronautical information, quality requirements are met.

3.4 Data error detection

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

3.4.2 Digital data error detection techniques shall be used in order to maintain the integrity levels as specified in 3.2.3.
Note.— Detailed specifications concerning digital data error detection techniques are contained in the PANS-AIM (Doc 10066).

3.5 Use of Automation

3.5.1 Automation shall be applied in order to ensure the timeliness, quality, efficiency and cost-effectiveness of aeronautical information services.
Note.— Guidance material on the development of databases and the establishment of data exchange services is contained in the Aeronautical Information Services Manual *(Doc 8126).*

3.5.2 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.
Note.— Risks of altering the integrity of data and information may be introduced by automated processes in case of unexpected systems behaviours.

3.5.3 In order to meet the data quality requirements, automation shall:
a) Enable digital aeronautical data exchange between the parties involved in the data processing chain; and
b) Use aeronautical information exchange models and data exchange models designed to be globally interoperable.

3.6 Quality management system

3.6.1 Quality management systems shall be implemented and maintained encompassing all functions of AIM, as outlined in 2.2. The execution of such quality management systems shall be made demonstrable for each function stage.

3.6.2 Quality management shall be applicable to the whole aeronautical information data chain from data origination to distribution to the next intended user, taking into consideration the intended use of data.

3.6.3 The quality management system established in accordance with 3.7.6.1 shall follow the ISO 9000 series of quality assurance standards, and be certified by an approved organization accredited certification body.

3.6.4 Within the context of the established quality management system, the competencies and the associated knowledge, skills and abilities required for each function shall be identified, and personnel assigned to perform those functions shall be appropriately trained. Processes shall be in place to ensure that personnel possess the competencies required to perform specific assigned functions. Appropriate records shall be maintained so that the qualifications of personnel can be confirmed. Initial and periodic assessments shall be established that require personnel to demonstrate the required competencies. Periodic assessments of personnel shall be used as a means to detect and correct shortfalls in knowledge, skills and abilities.

3.6.5 Each quality management system shall include the necessary policies, processes and procedures, including those for the use of metadata, to ensure and verify that aeronautical data is traceable throughout the aeronautical information data chain so as to allow any data anomalies or errors detected in use to be identified by root cause, corrected and communicated to affected users.

3.6.6 The established quality management system shall provide users with the necessary assurance and confidence that distributed aeronautical data and aeronautical information satisfy the aeronautical data quality requirements.

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

3.6.8 Demonstration of compliance of the quality management system applied shall be by audit. If nonconformity is identified, 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.

3.7 Human factors considerations

3.7.1 The organization of AIM as well as the design, contents, processing and distribution of aeronautical data and aeronautical information shall take into consideration human factors principles which facilitate their optimum utilization.

3.7.2 Due consideration shall be given to the integrity of information where human interaction is required and mitigating steps taken where risks are identified.
Note.— This may be accomplished through the design of systems, operating procedures or improvements in the operating environment.

CHAPTER 4
SCOPE OF AERONAUTICAL DATA AND AERONAUTICAL INFORMATION

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

4.1 Scope of aeronautical data and aeronautical information

4.1.1 The aeronautical data and aeronautical information to be received and managed by the AIM shall include at least the following sub-domains:
a) national regulations, rules and procedures;
b) aerodromes and heliports;
c) airspace;
d) ATS routes;
e) instrument flight procedures;
f) radio navigation aids/systems;
g) obstacles;
h) terrain; and
i) geographic information.

Note 1.— Detailed specifications concerning the content of each sub-domain are contained in the PANS-AIM (Doc 10066), Appendix 1.
Note 2.— Aeronautical data and aeronautical information in each sub-domain may be originated by more than one organization or authority.

4.1.2 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.
Note.— Specifications concerning the accuracy and integrity classification related to aeronautical data are contained in the PANS-AIM (Doc 10066), Appendix 1.

4.2 Metadata

4.2.1 Metadata shall be collected for aeronautical data processes and exchange points.

4.2.2 Metadata collection shall be applied throughout the aeronautical information data chain, from origination to distribution to the next intended user.
Note.— Detailed specifications concerning metadata are contained in the PANS-AIM (Doc 10066).

CHAPTER 5
AERONAUTICAL INFORMATION PRODUCTS AND SERVICES

5.1 General

5.1.1 Aeronautical information shall be provided in the form of aeronautical information products and associated services.
Note.— Specifications concerning the order of resolution of aeronautical data provided for each aeronautical information product are contained in the PANSAIM (Doc 10066), Appendix 1

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

5.2 Aeronautical information in a standardized presentation

5.2.1 Aeronautical information provided in a standardized presentation shall include the AIP, AIP Amendments, AIP Supplements, AICs, NOTAMs and Aeronautical Charts.
Note 1.— Detailed specifications about AIP, AIP Amendments, AIP Supplements, AICs and NOTAMs are contained in the PANS-AIM (Doc 10066).
Note 2.— Cases where digital data sets may replace the corresponding elements of the standardized presentation are detailed in the PANS-AIM (Doc 10066).

5.2.1.1 The AIP, AIP Amendment, AIP Supplement and AIC shall be provided on paper and/or as an electronic document.

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

5.2.2 Aeronautical Information Publication (AIP)

Note 1.— AIP are intended primarily to satisfy international requirements for the exchange of aeronautical information of a lasting character essential to air navigation.
Note 2.— AIP constitute the basic information source for permanent information and long duration temporary changes.

5.2.2.1 AIP shall include

a) a statement noting the CAA as the competent authority responsible for the air navigation facilities, services or procedures covered by the AIP;

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

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

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

5.2.3 AIP Supplement

5.2.3.1 A checklist of valid AIP Supplements shall be regularly provided.

Note.— Detailed specifications concerning the frequency for providing checklists of valid AIP Supplements are contained in the PANS-AIM (Doc 10066).

5.2.4 Aeronautical Information Circulars (AIC)

5.2.4.1 An AIC shall be used to provide:
a) a long-term forecast of any major change in legislation, regulations, procedures or facilities; or

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

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

5.2.4.2 An AIC shall not be used for information that qualifies for inclusion in AIP or NOTAM.

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

5.2.4.4 A checklist of currently valid AIC shall be regularly provided.
Note.— Detailed specifications concerning the frequency for providing checklists of valid AIC are contained in the PANS-AIM (Doc 10066).

5.2.5 Aeronautical Charts

5.2.5.1 The aeronautical charts listed alphabetically below shall, when available for designated international aerodromes/heliports, form part of the AIP, or be distributed provided separately to recipients of the AIP:
a) Aerodrome/Heliport Chart — ICAO;
b) Aerodrome Ground Movement Chart — ICAO;
c) Aerodrome Obstacle Chart — ICAO Type A;
d) Aerodrome Obstacle Chart — ICAO Type B (when available)
e) Aerodrome Terrain and Obstacle Chart — ICAO (Electronic);
f) Aircraft Parking/Docking Chart — ICAO;
g) Area Chart — ICAO;
h) ATC Surveillance Minimum Altitude Chart — ICAO;
i) Instrument Approach Chart — ICAO;
j) Precision Approach Terrain Chart — ICAO;
k) Standard Arrival Chart — Instrument (STAR) — ICAO;
l) Standard Departure Chart — Instrument (SID) — ICAO;
m) Visual Approach Chart — ICAO.
Note.— A page pocket may be used in the AIP to include the Aerodrome Terrain and Obstacle Chart — ICAO (Electronic) on appropriate electronic media.

5.2.5.2 The “Enroute Chart — ICAO” shall, when available, form part of the AIP, or be provided separately to recipients of the AIP.

5.2.5.3 The aeronautical charts listed alphabetically below shall, when available, be provided as aeronautical information products:
a) World Aeronautical Chart — ICAO 1:1 000 000;

b) Aeronautical Chart — ICAO 1:500 000;

c) Aeronautical Navigation Chart — ICAO Small Scale;

d) Plotting Chart — ICAO chart; and

e) ATC Surveillance Minimum Altitude Chart — ICAO.

5.2.5.4 Electronic aeronautical charts shall be provided based on digital databases and the use of geographic information systems.

5.2.5.5 The chart resolution of aeronautical data shall be that as specified for a particular chart.
Note.— Specifications concerning the chart resolution for aeronautical data are contained in the PANS-AIM (Doc 10066), Appendix 1.

5.2.6 NOTAM

5.2.6.1 A checklist of valid NOTAM shall be regularly provided
Note.— Detailed specifications concerning the frequency for providing checklists of valid NOTAM are contained in the PANS-AIM (Doc 10066).

5.3 Digital data sets

5.3.1 General

5.3.1.1 Digital data shall be in the form of the following data sets:
a) AIP data set;

b) terrain data sets;

c) obstacle data sets;

d) aerodrome mapping data sets; and

e) instrument flight procedure data sets.

Note.— Detailed specifications concerning the content of the digital data sets are contained in the PANS-AIM (Doc 10066).

5.3.1.2 Each data set shall be provided to the next intended user together with at least the minimum set of metadata that ensures traceability.
Note.— Detailed specifications concerning metadata are contained in the PANS-AIM (Doc 10066).

5.3.1.3 A checklist of valid data sets shall be regularly provided.

5.3.2 AIP data set

5.3.2.1 An AIP data set shall be provided covering the extent of information as provided in the AIP.

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

5.3.2.3 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.

5.3.3 Terrain and obstacle data sets

Note 1.— Numerical requirements for terrain and obstacle data sets are contained in the PANS-AIM (Doc 10066), Appendices 1 and 8.

Note 2.—Requirements for terrain and obstacle data collection surfaces are contained in the PANS-AIM (Doc 10066), Appendix 8.

5.3.3.1 The coverage areas for sets of electronic terrain and obstacle data shall be specified as:
— Area 1: the entire territory of a State;
— Area 2: within the vicinity of an aerodrome, subdivided as follows;
— Area 2a: a rectangular area around a runway that comprises the runway strip plus any clearway that exists.
Note.— See Annex 14, Volume I, Chapter 3, for dimensions for runway strip.
— Area 2b: an area extending from the ends of Area 2a in the direction of departure, with a length of 10 km and a splay of 15 per cent to each side;
— Area 2c: an area extending outside Area 2a and Area 2b at a distance of not more than 10 km from the boundary of Area 2a; and
— Area 2d: an area outside the Areas 2a, 2b and 2c up to a distance of 45 km from the aerodrome reference point, or to an existing terminal control area (TMA) boundary, whichever is nearest;
— Area 3: the area bordering an aerodrome movement area that extends horizontally from the edge of a runway to 90 m from the runway centre line and 50 m from the edge of all other parts of the aerodrome movement area.
— Area 4: The area extending 900 m prior to the runway threshold and 60 m each side of the extended runway centre line in the direction of the approach on a precision approach runway, Category II or III.

5.3.3.2 Where the terrain at a distance greater than 900 m (3 000 ft) from the runway threshold is mountainous or otherwise significant, the length of Area 4 shall be extended to a distance not exceeding 2 000 m (6 500 ft) from the runway threshold.

5.3.3.3 Terrain data sets

5.3.3.3.1 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.

5.3.3.3.2 Terrain data shall be provided for Area 1.

5.3.3.3.3 For aerodromes regularly used by international civil aviation, terrain data shall be provided for:
a) Area 2a;

b) the take-off flight path area; and

c) an area bounded by the lateral extent of the aerodrome obstacle limitation surfaces.

5.3.3.3.4 For aerodromes regularly used by international civil aviation, electronic additional terrain and obstacle data should be provided within Area 2 as follows:

a) in the area extending to 10 km from the ARP, and

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

5.3.3.3.5 Arrangements shall be made for the coordination of providing terrain data for adjacent aerodromes where their respective coverage areas overlap to assure that the data for the same terrain are correct.

5.3.3.3.6 For those aerodromes located near territorial boundaries, arrangements shall be made between the CAA and those States concerned to share terrain data.

5.3.3.3.7 For aerodromes regularly used by international civil aviation, terrain data shall be provided for Area 3.

5.3.3.3.8 For aerodromes regularly used by international civil aviation, electronic terrain and obstacle 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.

5.3.3.3.9 Where additional terrain data is collected to meet other aeronautical requirements, terrain data sets shall be expanded to include this additional data.

5.3.3.4 Obstacle data sets

5.3.3.4.1 Obstacle data sets shall contain the digital representation of the vertical and horizontal extent of obstacles.

5.3.3.4.2 Obstacle data shall not be included in terrain data sets.

5.3.3.4.3 The obstacle data shall be provided for obstacles in Area 1 whose height is 100 m or higher above ground.

5.3.3.4.4 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.

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

a) 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 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;

b) 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

c) penetrations of the aerodrome obstacle limitation surfaces.
Note.— Take-off flight path areas are specified in Annex 4, 3.8.2. Aerodrome obstacle limitation surfaces are specified in Annex 14, Volume 1, Chapter 4.

5.3.3.4.6 For aerodromes regularly used by international civil aviation, obstacle data shall be provided for Areas 2b, 2c and 2d for obstacles that penetrate the relevant obstacle data collection surface specified as follows:

a) Area 2b: an area extending from the ends of Area 2a in the direction of departure, with a length of 10 km and a splay of 15% to each side. The Area 2b obstacle collection surface has a 1.2% slope extending from the ends of Area 2a at the elevation of the runway end in the direction of departure, with a length of 10 km and a splay of 15% to each side;

b) Area 2c: an area extending outside Area 2a and Area 2b at a distance of not more than 10 km from the boundary of Area 2a. The Area 2c obstacle collection surface has a 1.2% slope extending outside Area 2a and Area 2b at a distance of not more than 10 km from the boundary of Area 2a. The initial elevation of Area 2c shall be the elevation of the point of Area 2a at which it commences; and

c) Area 2d: an area outside the Areas 2a, 2b and 2c up to a distance of 45 km from the aerodrome reference point, or to an existing TMA boundary, whichever is nearest. The Area 2d obstacle collection surface has a height of 100 m above ground;
except that data need not be collected for obstacles less than a height of 3 m above ground in Area 2b and less than a height of 15 m above ground in Area 2c.

5.3.3.4.7 Arrangements should be made for the coordination of providing obstacle data for adjacent aerodromes where their respective coverage areas overlap to assure that the data for the same obstacle are correct.

5.3.3.4.8 For those aerodromes located near territorial boundaries, arrangements shall be made between the CAA and those States concerned to share obstacle data.

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

5.3.3.4.10 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.

5.3.3.4.11 Where additional obstacle data are collected to meet other aeronautical requirements, the obstacle data sets shall be expanded to include these additional data.

5.3.4 Aerodrome mapping data sets

5.3.4.1 Aerodrome mapping data sets shall contain the digital representation of aerodrome features.
Note — Aerodrome features consist of attributes and geometries, which are characterized as points, lines or polygons. Examples include runway thresholds, taxiway guidance lines and parking stand areas.

5.3.4.2 Aerodrome mapping data sets shall be made available for aerodromes regularly used by international civil aviation.

5.3.5 Instrument flight procedure data sets.

5.3.5.1 Instrument flight procedure data sets shall contain the digital representation of instrument flight procedures.

5.3.5.2 Instrument flight procedures data sets shall be made available for aerodromes regularly used by international civil aviation.

5.4 Distribution services

5.4.1 General

5.4.1.1 Aeronautical information products shall be distributed to authorized users who request them.

5.4.1.2 AIP, AIP Amendments, AIP Supplements and AIC shall be made available by the most expeditious means.

5.4.1.3 Global communication networks such as the Internet shall, whenever practicable, be employed for the provision of aeronautical information products.

5.4.2 NOTAM distribution.

5.4.2.1 NOTAM shall be distributed on the basis of a request.

5.4.2.2 NOTAM shall be prepared in conformity with the relevant provisions of the ICAO communication procedures.

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

5.4.2.4 When a NOTAM is sent by means other than the AFS, a six-digit date-time group indicating the date and time of NOTAM origination, and the identification of the originator shall be used, preceding the text. The CAA, when the originator, shall select the NOTAM that are to be given international distribution.

5.4.2.5 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.

5.4.2.6 The CAA shall upon request grant distribution of NOTAM series other than those distributed internationally.

5.4.2.7 Selective distribution lists shall be used when practicable.
Note.—. Guidance material relating to selective distribution lists is contained in the Aeronautical Information Services Manual *(Doc 8126)*.

5.5 Pre-Flight Information Service

5.5.1 For any aerodrome/heliport used for international air operations, aeronautical information relative to the route stages originating at the aerodrome/heliport shall be made available to flight operations personnel, including flight crews and services responsible for pre-flight information.

5.5.2 Aeronautical information provided for pre-flight planning purposes shall include information of operational significance from the elements of the aeronautical information products.
Note. 1.— The elements of the aeronautical information products may be limited to national publications and when practicable, those of immediately adjacent States, provided a complete library of aeronautical information is available at a central location and means of direct communications are available with that library.
Note 2.— A recapitulation of valid NOTAM of operational significance and other information of urgent character may be made available to flight crews in the form of plain-language pre-flight information bulletins (PIB). Guidance material on the preparation of PIB is contained in the Aeronautical Information Services Manual (Doc 8126).

5.6. Post-flight information Service

5.6.1 For any aerodrome/heliport used for international air operations, arrangements shall be made to receive information concerning the state and operation of air navigation facilities or services noted by aircrews.

5.6.2 The arrangements specified in 5.6.1 shall ensure that such information is made available to the aeronautical information service for such distribution as the circumstances necessitate.

5.6.3 For any aerodrome/heliport used for international air operations, arrangements shall be made to receive information concerning the presence of wildlife hazard observed by aircrews.

5.6.4 The information about presence of wildlife hazard shall be made available to the aeronautical information service for such distribution as the circumstances necessitate.
Note.— See Annex 14, Volume I, Chapter 9, Section 9.4.

CHAPTER 6
AERONAUTICAL INFORMATION UPDATES

6.1 General Specifications

6.1.1 Aeronautical data and aeronautical information shall be kept up to date.

6.2 Aeronautical Information Regulation and Control (AIRAC)

6.2.1 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, including 8 November 2018:

a) Limits (horizontal and vertical), regulations and procedures applicable to:
1) flight information regions;
2) control areas;
3) control zones;
4) advisory areas;
5) ATS routes;
6) permanent danger, prohibited and restricted areas (including type and periods of activity when known) and ADIZ;
7) permanent areas or routes or portions thereof where the possibility of interception exists.

b) Positions, frequencies, call signs, identifiers, known irregularities and maintenance periods of radio navigation aids, and communication and surveillance facilities.

c) Holding and approach procedures, arrival and departure procedures, noise abatement procedures and any other pertinent ATS procedures.

d) Transition levels, transition altitudes and minimum sector altitudes.

e) Meteorological facilities (including broadcasts) and procedures.

f) Runways and stopways

g) Taxiways and aprons.

h) Aerodrome ground operating procedures (including low visibility procedures).

i) Approach and runway lighting.

j) Aerodrome operating minima if published by the CAA.

6.2.2 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.

6.2.3 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.

Note.— AIRAC Iinformation is distributed by the AIS unit at least 42 days in advance of the AIRAC effective dates with the objective of reaching recipients at least 28 days in advance of the effective date.

6.2.4 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.

6.2.5 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.

6.2.6 The regulated system (AIRAC) shall also be used for the provision of information relating to the establishment and withdrawal of, and premeditated significant changes in, the circumstances listed below:
a) Position, height and lighting of navigational obstacles.
b) Hours of service of aerodromes, facilities and services.
c) Customs, immigration and health services.
d) Temporary danger, prohibited and restricted areas and navigational hazards, military exercises and mass movements of aircraft.
e) Temporary areas or routes or portions thereof where the possibility of interception exists.

6.2.7 Whenever major changes are planned and where advance notice is desirable and practicable, information shall be made available by the AIS so as to reach recipients at least 56 days in advance of the effective date. This should be applied to the establishment of, and premeditated major changes in, the circumstances listed below, and other major changes if deemed necessary.
a) New aerodromes for international IFR operations.
b) New runways for IFR operations at international aerodromes.
c) Design and structure of the air traffic services route network.
d) Design and structure of a set of terminal procedures (including change of procedure bearings due to magnetic variation change).
e) Circumstances listed in 6.2.1 if the entire Kingdom or any significant portion thereof is affected or if cross-border coordination is required.
Note.— Guidance on what constitutes a major change is included in Doc 8126.

6.3 Aeronautical Information Product updates

6.3.1 AIP updates

6.3.1.1 AIP shall be amended or reissued at such regular intervals as may be necessary to keep them up to date.

6.3.1.2 Permanent changes to the AIP shall be published as AIP Amendments.

6.3.1.3 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.

6.3.2 NOTAM

6.3.2.1 When an AIP Amendment or an AIP Supplement is published in accordance with AIRAC procedures, a “Trigger” NOTAM shall be originated.
Note -- Detailed specifications concerning the Trigger NOTAM are contained in the PANS-AIM (Doc 10066).

6.3.2.2 A NOTAM shall be originated and issued promptly whenever the information to be distributed is of a temporary nature and of short duration or when operationally significant permanent changes, or temporary changes of long duration are made at short notice, except for extensive text and/or graphics.

6.3.2.3 A NOTAM shall be originated and issued concerning the following information:
a) establishment, closure or significant changes in operation of aerodrome(s)/ or heliport(s) or runways;
b) establishment, withdrawal and significant changes in operation of aeronautical services (AGA, AIS, ATS, CNS, MET, SAR, etc.);
c) establishment, withdrawal and significant changes in operational capability of radio navigation and air-ground communication services. This includes: interruption or return to operation, change of frequencies, change in notified hours of service, change of identification, change of orientation (directional aids), change of location, power increase or decrease amounting to 50 per cent or more, change in broadcast schedules or contents, or irregularity or unreliability of operation of any radio navigation and air-ground communication services or limitations of relay stations including operational impact, affected service, frequency and area;
d) unavailability of back-up and secondary systems, having a direct operational impact;
e) establishment, withdrawal or significant changes made to visual aids;
f) interruption of or return to operation of major components of aerodrome lighting systems;
g) establishment, withdrawal or significant changes made to procedures for air navigation services;
h) occurrence or correction of major defects or impediments in the manoeuvring area;
i) changes to and limitations on availability of fuel, oil and oxygen;
j) major changes to search and rescue facilities and services available;
k) establishment, withdrawal or return to operation of hazard beacons marking obstacles to air navigation;
l) changes in regulations requiring immediate action, e.g. prohibited areas for SAR action;
m) presence of hazards which affect air navigation (including obstacles, military exercises, displays, fireworks, sky lanterns, rocket debris, races and major parachuting events outside promulgated sites);
n) planned laser emissions, laser displays and search lights if pilots' night vision is likely to be impaired;
o) erecting or removal of, or changes to, obstacles to air navigation in the take-off/climb, missed approach, approach areas and runway strip;
p) establishment or discontinuance (including activation or deactivation) as applicable, or changes in the status of prohibited, restricted or danger areas;
q) establishment or discontinuance of areas or routes or portions thereof where the possibility of interception exists and where the maintenance of guard on the VHF emergency frequency 121.5 MHz is required;
r) allocation, cancellation or change of location indicators;
s) changes in aerodrome/heliport rescue and fire fighting category provided (see Annex 14, Volume I, Chapter 9, and Attachment A, Section 17);
t) presence or removal of, or significant changes in, hazardous conditions due to snow, slush, ice, radioactive material, toxic chemicals, volcanic ash deposition or water on the movement area;
u) outbreaks of epidemics necessitating changes in notified requirements for inoculations and quarantine measures;
v) observations or forecasts of space weather phenomena, the date and time of their occurrence, the flight levels where provided, and portions of the airspace which may be affected by the phenomena;
w) an operationally significant change in volcanic activity, the location, date and time of volcanic eruptions and/or horizontal and vertical extent of volcanic ash cloud, including direction of movement, flight levels and routes or portions of routes which could be affected;
x) release into the atmosphere of radioactive materials or toxic chemicals following a nuclear or chemical incident, the location, date and time of the incident, the flight levels and routes or portions thereof which could be affected and the direction of movement;
y) establishment of operations of humanitarian relief missions, such as those undertaken under the auspices of the United Nations, together with procedures and/or limitations which affect air navigation; and
z) implementation of short-term contingency measures in cases of disruption, or partial disruption, of air traffic services and related supporting services.

6.3.2.4 The following information shall not be notified by NOTAM:
a) routine maintenance work on aprons and taxiways which does not affect the safe movement of aircraft;

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

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

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

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

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

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

h) parachuting when in uncontrolled airspace under VFR (see 6.3.2.3 m)), when controlled, at promulgated sites or within danger or prohibited areas;

i) training activities by ground units;

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

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

l) national regulations not affecting general aviation;

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

n) general reminders on already published information;

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

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

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

r) closure, changes, unavailability in operation of aerodrome(s)/heliport(s) outside the aerodrome(s)/heliport(s) operational hours;

s) other non-operational information of a similar temporary nature.
Note.— Information which relates to an aerodrome and its vicinity and does not affect its operational status may be distributed locally during pre-flight or in-flight briefing or other local contact with flight crew members.

6.3.3 Data set updates

6.3.3.1 Data sets shall be amended or reissued at such regular intervals as may be necessary to keep them up to date.

6.3.3.2 Permanent changes and temporary changes of long duration (three months or longer) made available as digital data shall 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.

6.3.3.3 When made available as a completely re-issued data set, the differences from the previously issued complete data set shall be indicated.

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

6.3.3.5 Updates to AIP and the digital data sets shall be synchronized.

CHAPTER 7
AERONAUTICAL INFORMATION CIRCULARS (AIC)

7.1 Origination

7.1.1 An AIC shall be originated whenever it is necessary to promulgate aeronautical information which does not qualify:

a) under the specifications in 4.1 for inclusion in an AIP; or
b) under the specifications in 5.1 for the origination of a NOTAM.

7.1.1.1 An AIC shall be originated whenever it is desirable to promulgate:

a) a long-term forecast of any major change in legislation, regulations, procedures or facilities;
b) information of a purely explanatory or advisory nature liable to affect flight safety;
c) information or notification of an explanatory or advisory nature concerning technical, legislative or purely administrative matters.

This shall include:

1. forecasts of important changes in the air navigation procedures, services and facilities provided;
2. forecasts of implementation of new navigation systems;
3. significant information arising from aircraft accident/incident investigation which has a bearing on flight safety;
4. information on regulations relating to the safeguarding of international civil aviation against acts of unlawful interference;
5. advice on medical matters of special interest to pilots;
6. warnings to pilots concerning the avoidance of physical hazards;
7. effect of certain weather phenomena on aircraft operations;
8. information on new hazards affecting aircraft handling techniques;
9. regulations relating to the carriage of restricted articles by air;
10. reference to the requirements of, and publication of changes in, national legislation;
11. aircrew licensing arrangements;
12. training of aviation personnel;
13. application of, or exemption from, requirements in national legislation;
14. advice on the use and maintenance of specific types of equipment;
15. actual or planned availability of new or revised editions of aeronautical charts;
16. carriage of communication equipment;
17. explanatory information relating to noise abatement;
18. selected airworthiness directives;
19. changes in NOTAM series or distribution, new editions of AIP or major changes in their contents, coverage or format;
20. advance information on the snow plan (see 7.1.1.2);

21. other information of a similar nature.

Note.— The publication of an AIC does not remove the obligations set forth in Chapters 4 and 5.

7.2 General Specifications

7.2.1 The originating aeronautical information service shall select the AIC that are to be given international distribution.

7.2.2 Each AIC shall be allocated a serial number which shall be consecutive and based on the calendar year.

7.2.3 When AIC are distributed in more than one series, each series shall be separately identified by a letter.

Note.— Both text and diagrams may be included in an AIC.

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

Note.— Guidance on colour coding of AIC by subject can be found in the Aeronautical Information Services Manual *(Doc 8126)*.

7.2.5 A checklist of AIC currently in force shall be issued at least once a year, with distribution as for the AIC.

7.3 Distribution

CAA shall give AIC selected for international distribution the same distribution as for the AIP.

CHAPTER 8
PRE-FLIGHT AND POST-FLIGHT INFORMATION

8.1.1 At any aerodrome/heliport normally used for international air operations, aeronautical information essential for the safety, regularity and efficiency of air navigation and relative to the route stages originating at the aerodrome/heliport shall be made available to flight operations personnel, including flight crews and services responsible for pre-flight information.

8.1.2 Aeronautical information provided for pre-flight planning purposes at the aerodromes/heliports referred to in 8.1.1 shall include relevant:
a) elements of the Integrated Aeronautical Information Package;
b) maps and charts.

Note.— The documentation listed in a) and b) may be limited to national publications and when practicable, those of immediately adjacent States, provided a complete library of aeronautical information is available at a central location and means of direct communications are available between the aerodrome AIS unit and that library.

8.1.3 A recapitulation of valid NOTAM of operational significance and other information of urgent character shall be made available to flight crews in the form of plain-language pre-flight information bulletins (PIB).

Note.— Guidance on the preparation of PIB is contained in the Aeronautical Information Services Manual *(Doc 8126).*

8.2 Automated pre-flight information systems

8.2.1 Automated pre-flight information systems shall be used to make aeronautical data and aeronautical information available to operations personnel including flight crew members for self-briefing, flight planning and flight information service purposes. The aeronautical data and aeronautical information made available shall comply with the provisions of 8.1.2 and 8.1.3.

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

8.2.3 Automated pre-flight information systems for the supply of aeronautical data and aeronautical information for self-briefing, flight planning and flight information service shall:

a) provide for continuous and timely updating of the system database and monitoring of the validity and quality of the aeronautical data stored;
b) permit access to the system by operations personnel including flight crew members, aeronautical personnel concerned and other aeronautical users through suitable telecommunications means;
c) ensure provision, in paper copy form, of the aeronautical data and aeronautical information accessed, as required;
d) use access and interrogation procedures based on abbreviated plain language and ICAO location indicators, as appropriate, or based on a menu-driven user interface or other appropriate mechanism as agreed between the civil aviation authority and operator concerned; and
e) provide for rapid response to a user request for information.

Note.— ICAO abbreviations and codes and location indicators are given respectively in the Procedures for Air Navigation Services — ICAO Abbreviations and Codes (*PANS-ABC, Doc 8400*) *and* Location Indicators (*Doc 7910*).

8.2.4 Automated pre-flight information systems providing a harmonized, common point of access by operations personnel, including flight crew members and other aeronautical personnel concerned, to aeronautical information in accordance with 8.2.1 and meteorological information in accordance with 9.4.1 of Annex 3 — Meteorological Service for International Air Navigation, should be established by an agreement between the civil aviation authority or the agency to which the authority to provide service has been delegated in accordance with 2.1.1 c) and the relevant meteorological authority.

8.2.5 Where automated pre-flight information systems are used to provide the harmonized, common point of access by operations personnel, including flight crew members and other aeronautical personnel concerned, to aeronautical data, aeronautical information and meteorological information, the civil aviation authority or the agency to which the authority to provide service has been delegated in accordance with 2.1.1 c) shall remain responsible for the quality and timeliness of the aeronautical data and aeronautical information provided by means of such a system.

Note.— The meteorological authority concerned remains responsible for the quality of the meteorological information provided by means of such a system in accordance with 9.4.3 of Annex 3.

8.3 Post-flight information

8.3.1 Arrangements shall be made to receive at aerodromes/heliports information concerning the state and operation of air navigation facilities or services noted by aircrews and shall ensure that such information is made available to the aeronautical information service for such distribution as the circumstances necessitate.
8.3.2 Arrangements shall be made to receive at aerodromes/heliports information concerning the presence of birds observed by aircrews and shall ensure that such information is made available to the aeronautical information service for such distribution as the circumstances necessitate.

Note.— See Annex 14, Volume I, Chapter 9, Section 9.4.

CHAPTER 9

RESERVED

CHAPTER 10

ELECTRONIC TERRAIN AND OBSTACLE DATA

Note.— Electronic terrain and obstacle data are intended to be used in the following air navigation applications:

a) ground proximity warning system with forward looking terrain avoidance function and minimum safe altitude warning (MSAW) system;
b) determination of contingency procedures for use in the event of an emergency during a missed approach or take-off;

c) aircraft operating limitations analysis;
d) instrument procedure design (including circling procedure);
e) determination of en-route "drift-down" procedure and en-route emergency landing location;
f) advanced surface movement guidance and control system (A-SMGCS); and
g) aeronautical chart production and on-board databases.

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

10.1 Coverage areas and requirements for data provision

10.1.1 The coverage areas for sets of electronic terrain and obstacle data shall be specified as:

— Area 1: the entire territory of a State;
— Area 2: within the vicinity of an aerodrome, subdivided as follows;
— Area 2a: a rectangular area around a runway that comprises the runway strip plus any clearway that exists.

Note.— See Annex 14, Volume I, Chapter 3, for dimensions for runway strip.

— Area 2b: an area extending from the ends of Area 2a in the direction of departure, with a length of 10 km and a splay of 15 per cent to each side;
— Area 2c: an area extending outside Area 2a and Area 2b at a distance of not more than 10 km from the boundary of Area 2a; and
— Area 2d: an area outside the Areas 2a, 2b and 2c up to a distance of 45 km from the aerodrome reference point, or to an existing TMA boundary, whichever is nearest;
— Area 3: the area bordering an aerodrome movement area that extends horizontally from the edge of a runway to
90 m from the runway centre line and 50 m from the edge of all other parts of the aerodrome movement area.
— Area 4: The area extending 900 m prior to the runway threshold and 60 m each side of the extended runway centre line in the direction of the approach on a precision approach runway, Category II or III.

Note.— See Appendix 8 for descriptions and graphical illustrations of the coverage areas.

10.1.2 Where the terrain at a distance greater than 900 m (3 000 ft) from the runway threshold is mountainous or otherwise significant, the length of Area 4 should be extended to a distance not exceeding 2 000 m (6 500 ft) from the runway threshold.

10.1.3 Electronic terrain data shall be provided for Area 1. The obstacle data shall be provided for obstacles in Area 1 higher than 100 m above ground.

10.1.4 From 12 November 2015, at aerodromes regularly used by international civil aviation, electronic obstacle data shall be provided for all obstacles within Area 2 that are assessed as being a hazard to air navigation.

10.1.5 From 12 November 2015, at aerodromes regularly used by international civil aviation, electronic terrain data shall be provided for:
a) Area 2a;
b) the take-off flight path area; and
c) an area bounded by the lateral extent of the aerodrome obstacle limitation surfaces.

10.1.6 From 12 November 2015, at aerodromes regularly used by international civil aviation, electronic obstacle data shall be provided for:

a) Area 2a , for those obstacles that penetrate the relevant obstacle data collection surface specified in Appendix 8;
b) 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
c) penetrations of the aerodrome obstacle limitation surfaces.

Note.— Take-off flight path areas are specified in Annex 4, 3.8.2. Aerodrome obstacle limitation surfaces are specified
in Annex 14, Volume 1, Chapter 4.

10.1.7 At aerodromes regularly used by international civil aviation, electronic terrain and obstacle data should be provided for Areas 2b, 2c and 2d for obstacles and terrain that penetrate the relevant terrain and obstacle data collection surface specified in Appendix 8, except that data need not be collected for obstacles less than a height of 3 m above ground in Area 2b and less than a height of 15 m above ground in Area 2c.

10.1.8 At aerodromes regularly used by international civil aviation, electronic terrain and obstacle data should be provided for Area 3 for terrain and obstacles that penetrate the relevant obstacle data collection surface specified in Appendix 8, Figure A8-3.

10.1.9 At aerodromes regularly used by international civil aviation, electronic terrain and obstacle data shall be provided for Area 4 for terrain and obstacles that penetrate the relevant obstacle data collection surface specified in Appendix 8, for all runways where precision approach Category II or III operations have been established and where detailed terrain information is required by operators to enable them to assess the effect of terrain on decision height determination by use of radio altimeters.

Note.— Area 4 terrain data and Area 2 obstacle data are normally sufficient to support the production of the Precision Approach Terrain Chart — ICAO. When more detailed obstacle data are required for Area 4, these may be provided in accordance with the Area 4 obstacle data requirements specified in Appendix 8, Table A8-2. Guidance on appropriate obstacles for this chart is given in the Aeronautical Chart Manual *(Doc 8697).*

10.1.10 Where additional electronic obstacle or terrain data are collected to meet other aeronautical requirements, the obstacle and terrain data sets should be expanded to include these additional data.

10.1.11 Arrangements should be made for the coordination of providing Area 2 electronic terrain and obstacle data for adjacent aerodromes where their respective coverage areas overlap to assure that the data for the same obstacle or terrain are correct.

10.2 Terrain data set — content, numerical specification and structure

10.2.1 A terrain data set shall contain digital sets of data representing terrain surface in the form of continuous elevation values at all intersections (points) of a defined grid, referenced to common datum. A terrain grid shall be angular or linear and shall be of regular or irregular shape.

Note.— In regions of higher latitudes, latitude grid spacing may be adjusted to maintain a constant linear density of measurement points.

10.2.2 Sets of electronic terrain data shall include spatial (position and elevation), thematic and temporal aspects for the surface of the Earth containing naturally occurring features such as mountains, hills, ridges, valleys, bodies of water, permanent ice and snow, and excluding obstacles. In practical terms, depending on the acquisition method used, this shall represent the continuous surface that exists at the bare Earth, the top of the canopy or something in-between, also known as “first reflective surface”.

10.2.3 In terrain data sets, only one feature type, i.e. terrain, shall be provided. Feature attributes describing terrain shall be those listed in Table A8-3. The terrain feature attributes listed in Table A8-3 represent the minimum set of terrain attributes, and those annotated as mandatory shall be recorded in the terrain data set.

10.2.4 Electronic terrain data for each area shall conform to the applicable numerical requirements in Appendix 8, Table A8-1.

10.3 Obstacle data set — content, numerical specification and structure

10.3.1 Obstacle data shall comprise the digital representation of the vertical and horizontal extent of the obstacle. Obstacles shall not be included in terrain data sets. Obstacle data elements are features that shall be represented in the data sets by points, lines or polygons.

10.3.2 In an obstacle data set, all defined obstacle feature types shall be provided and each of them shall be described according to the list of mandatory attributes provided in Appendix 8, Table A8-4.
Note.— By definition, obstacles can be fixed (permanent or temporary) or mobile. Specific attributes associated with mobile (feature operations) and temporary types of obstacles are annotated in Appendix 8, Table A8-4, as optional attributes. If these types of obstacles are to be provided in the data set, appropriate attributes describing such obstacles are also required.

10.3.3 Electronic obstacle data for each area shall conform to the applicable numerical requirements in Appendix 8, Table A8-2.

CHAPTER 11
AERODROME MAPPING DATA

Note 1.— Aerodrome mapping data include aerodrome geographic information that supports applications which improve the user's situational awareness or supplements surface navigation, thereby increasing safety margins and operational efficiency. Aerodrome mapping data sets with appropriate data element accuracy support requirements for collaborative decision making, common situational awareness, and aerodrome guidance applications are intended to be used, among others, in the following air navigation applications:

- *a) position and route awareness including moving maps with own ship position, surface guidance and navigation (such as A-SMGCS);*
- *b) traffic awareness including surveillance and runway incursion detection and alerting;*
- *c) facilitation of aerodrome-related aeronautical information, including NOTAM;*
- *d) resource and aerodrome facility management; and*
- *e) aeronautical chart production.*
- *f) The data may also be used in other applications such as training/flight simulator and synthetic vision systems.*

Note 2.— Aerodrome mapping data are organized and arranged in aerodrome mapping databases (AMDBs) for ease of electronic storage and usage by appropriate applications.

11.1 Aerodrome mapping data — requirements for provision

11.1.1 Aerodrome mapping data should be supported by electronic terrain and obstacle data for Area 3 in order to ensure consistency and quality of all geographical data related to the aerodrome.

Note 1.— Accuracy and integrity requirements for aerodrome mapping data are contained in Annex 14, Volume I, Appendix 5.

Note 2.— Electronic terrain and obstacle data pertaining to Area 3 and aerodrome mapping data may be originated using common acquisition techniques and managed within a single geographic information system (GIS).

Note 3.— Supporting material with respect to the processing of electronic terrain and obstacle data and aerodrome mapping data is contained in RTCA Document DO-200A and European Organization for Civil Aviation Equipment (EUROCAE) Document ED-76 — Standards for Processing Aeronautical Data.

11.2 Aerodrome mapping data product specification

11.2.1 The ISO 19100 series of standards for geographic information shall be used as a reference framework.

Note.— This is intended to facilitate and support the use and exchange of aerodrome mapping data between data providers and data users.

11.2.2 Aerodrome mapping data products shall be described following the ISO 19131 data product specification standard.

Note.— This includes an overview, specification scope, data product identification, data content and structure, reference system, data quality, data capture, data maintenance, data portrayal, data product delivery, additional information, and metadata.

APPENDIX 1
CONTENTS OF THE AERONAUTICAL INFORMATION PUBLICATION (AIP)

(See Chapter 4)

PART 1 — GENERAL (GEN)

When the AIP is produced as one volume, the preface, record of AIP Amendments, record of AIP Supplements, checklist of AIP pages and list of current hand amendments appear only in Part 1 — GEN, and the annotation “not applicable” must be entered against each of these subsections in Parts 2 and 3.

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

GEN 0.1 Preface

Brief description of the Aeronautical Information Publication (AIP), including:

1. name of the publishing authority;
2. applicable ICAO documents;
3. publication media (i.e. printed, online or other electronic media);
4. the AIP structure and established regular amendment interval;
5. copyright policy, if applicable; and
6. service to contact in case of detected AIP errors or omissions.

GEN 0.2 Record of AIP Amendments

A record of AIP Amendments and AIRAC AIP Amendments (published in accordance with the AIRAC system) containing:

1. amendment number;
2. publication date;
3. date inserted (for the AIRAC AIP Amendments, effective date); and
4. initials of officer who inserted the amendment.

GEN 0.3 Record of AIP Supplements

A record of issued AIP Supplements containing:

1. Supplement number;
2. Supplement subject;
3. AIP section(s) affected;
4. period of validity; and
5. Cancellation record

GEN 0.4 Checklist of AIP pages

A checklist of AIP pages containing:

1. page number/chart title; and
2. publication or effective date (day, month by name and year) of the aeronautical information.

GEN 0.5 List of hand amendments to the AIP

A list of current hand amendments to the AIP containing:

1. AIP page(s) affected;
2. amendment text; and
3. AIP Amendment number by which a hand amendment was introduced.

GEN 0.6 Table of contents to Part 1

A list of sections and subsections contained in Part 1 — General (GEN).
Note.— Subsections may be listed alphabetically.

GEN 1. NATIONAL REGULATIONS AND REQUIREMENTS

GEN 1.1 Designated authorities

The addresses of designated authorities concerned with the facilitation of international air navigation (civil aviation, meteorology, customs, immigration, health, en-route and aerodrome/heliport charges, agricultural quarantine and aircraft accident investigation) containing, for each authority:

1. designated authority;
2. name of the authority;
3. postal address;
4. telephone number;
5. telefax number;
6. e-mail address;
7. aeronautical fixed service (AFS) address; and
8. website address, if available.

GEN 1.2 Entry, transit and departure of aircraft

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

GEN 1.3 Entry, transit and departure of passengers and crew

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

GEN 1.4 Entry, transit and departure of cargo

Regulations (including customs, and requirements for advance notification and applications for permission) concerning entry, transit and departure of cargo.
Note.— Provisions for facilitating entry and departure for search, rescue, salvage, investigation, repair or salvage in connection with lost or damaged aircraft are detailed in section GEN 3.6, Search and rescue.

GEN 1.5 Aircraft instruments, equipment and flight documents

Brief description of aircraft instruments, equipment and flight documents, including:

1. instruments, equipment (including aircraft communication, navigation and surveillance equipment) and flight documents to be carried on aircraft, including any special requirement in addition to the provisions specified in Annex 6, Part I, Chapters 6 and 7; and
2. emergency locator transmitter (ELT), signalling devices and life-saving equipment as presented in Annex 6, Part I, 6.6 and Part II, 2.4.5, where so determined by regional air navigation meetings, for flights over designated land areas.

GEN 1.6 Summary of national regulations and international agreements/conventions

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

GEN 1.7 Differences from ICAO Standards, Recommended Practices and Procedures

A list of significant differences between national regulations and practices of the State and related ICAO provisions, including:
1) provision affected (Annex and edition number, paragraph); and
2) difference in full text.
All significant differences must be listed under this subsection. All Annexes must be listed in numerical order even if there is no difference to an Annex, in which case a NIL notification must be provided. National differences or the degree of non-application of the regional supplementary procedures (SUPPs) must be notified immediately following the Annex to which the supplementary procedure relates.

GEN 2. TABLES AND CODES

GEN 2.1 Measuring system, Aircraft markings, Holidays

GEN 2.1.1 Units of measurement
Description of units of measurement used including table of units of measurement.

GEN 2.1.2 Temporal reference system
Description of the temporal reference system (calendar and time system) employed, together with an indication of whether or not daylight saving hours are employed and how the temporal reference system is presented throughout the AIP.

GEN 2.1.3 Horizontal reference system
Brief description of the horizontal (geodetic) reference system used, including:

1. name/designation of the reference system;
2. identification and parameters of the projection;
3. identification of the ellipsoid used;
4. identification of the datum used;
5. area(s) of application; and
6. an explanation, if applicable, of the asterisk used to identify those coordinates that do not meet Annex 11 and 14 accuracy requirements.

GEN 2.1.4 Vertical reference system
Brief description of the vertical reference system used, including:

1. name/designation of the reference system;
2. description of the geoid model used including the parameters required for height transformation between the model used and EGM-96; and
3. an explanation, if applicable, of the asterisk used to identify those elevations/geoid undulations that do not meet Annex 14 accuracy requirements.

GEN 2.1.5 Aircraft nationality and registration marks
Indication of aircraft nationality and registration marks adopted by the State.

GEN 2.1.6 Public holidays
A list of public holidays with indication of services being affected.

GEN 2.2 Abbreviations used in AIS publications

A list of alphabetically arranged abbreviations and their respective significations used by the State in its AIP and in the distribution of aeronautical data and aeronautical information with appropriate annotation for those national abbreviations that are different from those contained in the *Procedures for Air Navigation Services — ICAO Abbreviations and Codes* (PANS-ABC, Doc 8400).
Note.— A list of alphabetically arranged definitions/glossary of terms may also be added.

GEN 2.3 Chart symbols

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

GEN 2.4 Location indicators

A list of alphabetically arranged location indicators assigned to the locations of aeronautical fixed stations to be used for encoding and decoding purposes. An annotation to locations not connected to the aeronautical fixed service (AFS) must be provided.

GEN 2.5 List of radio navigation aids

A list of radio navigation aids arranged alphabetically, containing:

1. identifier;
2. name of the station;
3. type of facility/aid; and
4. indication whether aid serves en-route (E), aerodrome (A) or dual (AE) purposes.

GEN 2.6 Conversion of units of measurement

Tables for conversion or, alternatively, conversion formulae between:

1. nautical miles and kilometres and vice versa;
2. feet and metres and vice versa;
3. decimal minutes of arc and seconds of arc and vice versa; and
4. other conversions as appropriate.

GEN 2.7 Sunrise/Sunset

Information on the time of sunrise and sunset including a brief description of criteria used for determination of the times given and either a simple formulae or table from which times may be calculated for any location within its territory/area of responsibility, or an alphabetical list of locations for which the times are given in a table with a reference to the related page in the table and the sunrise/sunset tables for the selected stations/locations, including:

1. station name;
2. ICAO location indicator;
3. geographical coordinates in degrees and minutes;
4. date(s) for which times are given;
5. time for the beginning of morning civil twilight;
6. time for sunrise;
7. time for sunset; and
8. time for the end of evening civil twilight.

GEN 3. SERVICES

GEN 3.1 Aeronautical information services

GEN 3.1.1 Responsible service

Description of the Aeronautical Information Service (AIS) provided and its major components, including:

1. service/unit name;
2. postal address;
3. telephone number;
4. telefax number;
5. e-mail address;
6. AFS address;
7. website address, if available;
8. a statement concerning the ICAO documents on which the service is based and a reference to the AIP location where differences, if any, are listed; and
9. an indication if service is not H24.

GEN 3.1.2 Area of responsibility
The area of responsibility for the aeronautical information service.

GEN 3.1.3 Aeronautical publications
Description of the elements of the Integrated Aeronautical Information Package, including:

1. AIP and related amendment service;
2. AIP Supplements;
3. AIC;
4. NOTAM and pre-flight information bulletins (PIB);
5. checklists and lists of valid NOTAM; and
6. how they may be obtained.

When an AIC is used to promulgate publication prices, that must be indicated in this section of the AIP.

GEN 3.1.4 AIRAC system
Brief description of the AIRAC system provided including a table of present and near future AIRAC dates.

GEN 3.1.5 Pre-flight information service at aerodromes/heliports
A list of aerodromes/heliports at which pre-flight information is routinely available, including an indication of relevant:

1. elements of the Integrated Aeronautical Information Packages held;
2. maps and charts held; and
3. general area of coverage of such data.

GEN 3.1.6 Electronic terrain and obstacle data
Details of how electronic terrain and obstacle data may be obtained, containing:

1. name of the individual, service or organization responsible;
2. street address and e-mail address of the individual, service or organization responsible;
3. telefax number of the individual, service or organization responsible;
4. contact telephone number of the individual, service or organization responsible;
5. hours of service (time period including time zone when contact can be made);
6. online information that can be used to contact the individual, service or organization; and
7. supplemental information, if necessary, on how and when to contact the individual, service or organization.

GEN 3.2 Aeronautical charts

GEN 3.2.1 Responsible service(s)
Description of service(s) responsible for the production of aeronautical charts, including:

1. service name;
2. postal address;
3. telephone number;
4. telefax number;
5. e-mail address;
6. AFS address;
7. website address, if available;
8. a statement concerning the ICAO documents on which the service is based and a reference to the AIP location where differences, if any, are listed; and
9. an indication if service is not H24.

GEN 3.2.2 Maintenance of charts
Brief description of how aeronautical charts are revised and amended.

GEN 3.2.3 Purchase arrangements
Details of how charts may be obtained, containing:

1. service/sales agency(ies);
2. postal address;
3. telephone number;
4. telefax number;
5. e-mail address;
6. AFS address; and
7. website address, if available.

GEN 3.2.4 Aeronautical chart series available
A list of aeronautical chart series available followed by a general description of each series and an indication of the intended use.

GEN 3.2.5 List of aeronautical charts available
A list of aeronautical charts available, including:

1. title of series;
2. scale of series;
3. name and/or number of each chart or each sheet in a series;
4. price per sheet; and
5. date of latest revision.

GEN 3.2.6 Index to the World Aeronautical Chart (WAC) — ICAO 1:1 000 000
An index chart showing coverage and sheet layout for the WAC 1:1 000 000 produced by a State. If Aeronautical Chart —
ICAO 1:500 000 is produced instead of WAC 1:1 000 000, index charts must be used to indicate coverage and sheet layout for the Aeronautical Chart — ICAO 1:500 000.

GEN 3.2.7 Topographical charts
Details of how topographical charts may be obtained, containing:

1. name of service/agency(ies);
2. postal address;
3. telephone number;
4. telefax number;
5. e-mail address;
6. AFS address; and
7. website address, if available.

GEN 3.2.8 Corrections to charts not contained in the AIP
A list of corrections to aeronautical charts not contained in the AIP, or an indication where such information can be obtained.

GEN 3.3 Air Traffic Services

GEN 3.3.1 Responsible service
Description of the air traffic service and its major components, including:

1. service name;
2. postal address;
3. telephone number;
4. telefax number;
5. e-mail address;
6. AFS address;

7. website address, if available;
8. a statement concerning the ICAO documents on which the service is based and a reference to the AIP location where differences, if any, are listed; and
9. an indication if service is not H24.

GEN 3.3.2 Area of responsibility
Brief description of area of responsibility for which air traffic services are provided.

GEN 3.3.3 Types of services
Brief description of main types of air traffic services provided.

GEN 3.3.4 Coordination between the operator and ATS
General conditions under which coordination between the operator and air traffic services is effected.
GEN 3.3.5 Minimum flight altitude
The criteria used to determine minimum flight altitudes.

GEN 3.3.6 ATS units address list
A list of ATS units and their addresses arranged alphabetically, containing:

1. unit name;
2. postal address;
3. telephone number;
4. telefax number;
5. e-mail address;
6. AFS address; and
7. website address, if available.

GEN 3.4 Communication services

GEN 3.4.1 Responsible service
Description of the service responsible for the provision of telecommunication and navigation facilities, including:

1. service name;
2. postal address;
3. telephone number;
4. telefax number;
5. e-mail address;
6. AFS address;
7. website address, if available;
8. a statement concerning the ICAO documents on which the service is based and a reference to the AIP location where differences, if any, are listed; and
9. an indication if service is not H24.

GEN 3.4.2 Area of responsibility
Brief description of area of responsibility for which telecommunication service is provided.

GEN 3.4.3 Types of service
Brief description of the main types of service and facilities provided, including:

1. radio navigation services;
2. voice and/or data link services;
3. broadcasting service;
4. language(s) used; and
5. an indication of where detailed information can be obtained.

GEN 3.4.4 Requirements and conditions

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

GEN 3.4.5 Miscellaneous
Any additional information (e.g. selected radio broadcasting stations, telecommunications diagram).

GEN 3.5 Meteorological services

GEN 3.5.1 Responsible service
Brief description of the meteorological service responsible for the provision of meteorological information, including:

1. service name;
2. postal address;
3. telephone number;
4. telefax number;
5. e-mail address;
6. AFS address;
7. website address, if available;
8. a statement concerning the ICAO documents on which the service is based and a reference to the AIP location where differences, if any, are listed; and
9. an indication if service is not H24.

GEN 3.5.2 Area of responsibility
Brief description of area and/or air routes for which meteorological service is provided.

GEN 3.5.3 Meteorological observations and reports
Detailed description of the meteorological observations and reports provided for international air navigation, including:

1. name of the station and the ICAO location indicator;
2. type and frequency of observation including an indication of automatic observing equipment;
3. types of meteorological reports (e.g. METAR) and availability of a trend forecast;
4. specific type of observation system and number of observation sites used to observe and report surface wind, visibility, runway visual range, cloud base, temperature and, where applicable, wind shear (e.g. anemometer at intersection of runways, transmissometer next to touchdown zone, etc.);
5. hours of operation; and
6. indication of aeronautical climatological information available.

GEN 3.5.4 Types of services
Brief description of the main types of service provided, including details of briefing, consultation, display of meteorological information, flight documentation available for operators and flight crew members, and of the methods and means used for supplying the meteorological information.

GEN 3.5.5 Notification required from operators
Minimum amount of advance notice required by the meteorological authority from operators in respect of briefing, consultation and flight documentation and other meteorological information they require or change.

GEN 3.5.6 Aircraft reports
As necessary, requirements of the meteorological authority for the making and transmission of aircraft reports.

GEN 3.5.7 VOLMET service
Description of VOLMET and/or D-VOLMET service, including:

1. name of transmitting station;
2. call sign or identification and abbreviation for the radio communication emission;
3. frequency or frequencies used for broadcast;
4. broadcasting period;
5. hours of service;
6. list of aerodromes/heliports for which reports and/or forecasts are included; and
7. reports, forecasts and SIGMET information included and remarks.

GEN 3.5.8 SIGMET and AIRMET service
Description of the meteorological watch provided within flight information regions or control areas for which air traffic services are provided, including a list of the meteorological watch offices with:

1. name of the meteorological watch office, ICAO location indicator;
2. hours of service;
3. flight information region(s) or control area(s) served;
4. SIGMET validity periods;
5. specific procedures applied to SIGMET information (e.g. for volcanic ash and tropical cyclones);
6. procedures applied to AIRMET information (in accordance with relevant regional air navigation agreements);
7. the air traffic services unit(s) provided with SIGMET and AIRMET information; and
8. additional information (e.g. concerning any limitation of service, etc.).

GEN 3.5.9 Other automated meteorological services
Description of available automated services for the provision of meteorological information (e.g. automated pre-flight information service accessible by telephone and/or computer modem) including:

1. service name;
2. information available;
3. areas, routes and aerodromes covered; and
4. telephone and telefax number(s), e-mail address, and, if available, website address.
5.

GEN 3.6 Search and Rescue

GEN 3.6.1 Responsible service(s)
Brief description of service(s) responsible for the provision of search and rescue (SAR), including:

1. service/unit name;
2. postal address;
3. telephone number;
4. telefax number;
5. e-mail address;
6. AFS address;
7. website address, if available; and
8. a statement concerning the ICAO documents on which the service is based and a reference to the AIP location where differences, if any, are listed.

GEN 3.6.2 Area of responsibility
Brief description of area of responsibility within which search and rescue services are provided.
Note.— A chart may be included to supplement the description of the area.

GEN 3.6.3 Types of service
Brief description and geographical portrayal, where appropriate, of the type of service and facilities provided including indications where SAR aerial coverage is dependent upon significant deployment of aircraft.

GEN 3.6.4 SAR agreements
Brief description of SAR agreements in force, including provisions for facilitating entry and departure of other States' aircraft
for search, rescue, salvage, repair or salvage in connection with lost or damaged aircraft, either with airborne notification only or after flight plan notification.

GEN 3.6.5 Conditions of availability
Brief description of provisions for search and rescue, including the general conditions under which the service and facilities are available for international use, including an indication of whether a facility available for search and rescue is specialized in SAR techniques and functions, or is specially used for other purposes but adapted for SAR purposes by training and equipment, or is only occasionally available and has no particular training or preparation for SAR work.

GEN 3.6.6 Procedures and signals used
Brief description of the procedures and signals employed by rescue aircraft and a table showing the signals to be used by survivors.

GEN 4. CHARGES FOR AERODROMES/HELIPORTS AND AIR NAVIGATION SERVICES

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

GEN 4.1 Aerodrome/heliport charges

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

1. *landing of aircraft;*
2. *parking, hangarage and long-term storage of aircraft;*
3. *passenger service;*
4. *security;*
5. *noise-related items;*
6. *other (customs, health, immigration, etc.);*
7. *exemptions/reductions; and*
8. *methods of payment.*

GEN 4.2 Air navigation services charges

Brief description of charges which may be applicable to air navigation services provided for international use, including:

1. *approach control;*
2. *route air navigation services;*
3. *cost basis for air navigation services and exemptions/reductions; and*
4. *methods of payment.*

PART 2

EN-ROUTE (ENR)

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

ENR 0.6 Table of contents to Part 2
A list of sections and subsections contained in Part 2 — En-route.
Note.— Subsections may be listed alphabetically.

ENR 1. GENERAL RULES AND PROCEDURES

ENR 1.1 General rules
The requirement is for publication of the general rules as applied within the State.

ENR 1.2 Visual flight rules
The requirement is for publication of the visual flight rules as applied within the State.

ENR 1.3 Instrument flight rules
The requirement is for publication of the instrument flight rules as applied within the State.

ENR 1.4 ATS airspace classification and description
ENR 1.4.1 ATS airspace classification

The description of ATS airspace classes in the form of the ATS airspace classification table in Annex 11, Appendix 4, appropriately annotated to indicate those airspace classes not used by the State.

ENR 1.4.2 ATS airspace description
Other ATS airspace descriptions as applicable, including general textual descriptions.

ENR 1.5 Holding, approach and departure procedures

ENR 1.5.1 General
The requirement is for a statement concerning the criteria on which holding, approach and departure procedures are established. If different from ICAO provisions, the requirement is for presentation of criteria used in a tabular form.

ENR 1.5.2 Arriving flights
The requirement is to present procedures (conventional or area navigation or both) for arriving flights which are common to flights into or within the same type of airspace. If different procedures apply within a terminal airspace, a note to this effect must be given together with a reference to where the specific procedures can be found.

ENR 1.5.3 Departing flights
The requirement is to present procedures (conventional or area navigation or both) for departing flights which are common to flights departing from any aerodrome/heliport.

ENR 1.5.4 Other relevant information and procedures
Brief description of additional information, e.g. entry procedures, final approach alignment, holding procedures and patterns.

ENR 1.6 ATS surveillance services and procedures

ENR 1.6.1 Primary radar
Description of primary radar services and procedures, including:

1. supplementary services;
2. the application of radar control service;
3. radar and air-ground communication failure procedures;
4. voice and CPDLC position reporting requirements; and
5. graphic portrayal of area of radar coverage.

ENR 1.6.2 Secondary surveillance radar (SSR)
Description of secondary surveillance radar (SSR) operating procedures, including:

1. emergency procedures;
2. air-ground communication failure and unlawful interference procedures;
3. the system of SSR code assignment;
4. voice and CPDLC position reporting requirements; and
5. graphic portrayal of area of SSR coverage.

Note.— The SSR description is of particular importance in areas or routes where the possibility of interception exists.

ENR 1.6.3 Automatic dependent surveillance — broadcast (ADS-B)
Description of automatic dependent surveillance — broadcast (ADS-B) operating procedures, including:

1. emergency procedures;
2. air-ground communication failure and unlawful interference procedures;
3. aircraft identification requirements;
4. voice and CPDLC position reporting requirements; and
5. graphic portrayal of area of ADS-B coverage.

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

ENR 1.6.4 Other relevant information and procedures
Brief description of additional information and procedures, e.g. radar failure procedures and transponder failure procedures.

ENR 1.7 Altimeter setting procedures
The requirement is for a statement of altimeter setting procedures in use, containing:

1. brief introduction with a statement concerning the ICAO documents on which the procedures are based together with differences to ICAO provisions, if any;
2. basic altimeter setting procedures;
3. description of altimeter setting region(s);
4. procedures applicable to operators (including pilots); and
5. table of cruising levels.

ENR 1.8 Regional supplementary procedures
The requirement is for presentation of regional supplementary procedures (SUPPs) affecting the entire area of responsibility.

ENR 1.9 Air traffic flow management and airspace management
Brief description of air traffic flow management (ATFM) system and airspace management, including:

1. ATFM structure, service area, service provided, location of unit(s) and hours of operation;
2. types of flow messages and descriptions of the formats; and
3. procedures applicable for departing flights, containing:
   a) service responsible for provision of information on applied ATFM measures;
   b) flight plan requirements; and
   c) slot allocations.
4. *information on overall responsibility regarding airspace management within FIR(s), details of civil/military airspace allocation and management coordination, structure of manageable airspace (allocation and changes to allocation) and general operating procedures.*

ENR 1.10 Flight planning
The requirement is to indicate any restriction, limitation or advisory information related to the flight planning stage which

may assist the user in the presentation of the intended flight operation, including:

1. procedures for the submission of a flight plan;
2. repetitive flight plan system; and
3. changes to the submitted flight plan.

ENR 1.11 Addressing of flight plan messages

The requirement is for an indication, in tabular form, of the addresses allocated to flight plans, showing:

1. category of flight (IFR, VFR or both);
2. route (into or via FIR and/or TMA); and
3. message address.

ENR 1.12 Interception of civil aircraft

The requirement is for a complete statement of interception procedures and visual signals to be used with a clear indication of whether ICAO provisions are applied and, if not, that differences exist.

Note.— A list of significant differences between national regulations and practices of the State and related ICAO provisions is found in Gen 1.7.

ENR 1.13 Unlawful interference

The requirement is for presentation of appropriate procedures to be applied in case of unlawful interference.

ENR 1.14 Air traffic incidents

Description of air traffic incidents reporting system, including:

1. definition of air traffic incidents;
2. use of the “Air Traffic Incident Reporting Form”;
3. reporting procedures (including in-flight procedures); and
4. purpose of reporting and handling of the form.

Note.— A copy of the “Air Traffic Incident Report Form” (PANS ATM, Doc 4444, Appendix 4) may be included for reference.

ENR 2. AIR TRAFFIC SERVICES AIRSPACE

ENR 2.1 FIR, UIR, TMA AND CTA

Detailed description of flight information regions (FIR), upper flight information regions (UIR), and control areas (CTA) (including specific CTA such as TMA), including:

1. name, geographical coordinates in degrees and minutes of the FIR/UIR lateral limits and in degrees, minutes and seconds of the CTA lateral limits, vertical limits and class of airspace;
2. identification of unit providing the service;
3. call sign of aeronautical station serving the unit and language(s) used, specifying the area and conditions, when and where to be used, if applicable;
4. frequencies supplemented by indications for specific purposes; and
5. remarks.

Control zones around military air bases not otherwise described in the AIP must be included in this subsection. Where the requirements of Annex 2 concerning flight plans, two-way communications and position reporting apply to all flights in order to eliminate or reduce the need for interceptions and/or where the possibility of interception exists and the maintenance of guard on the VHF emergency channel 121.5 MHz is required, a statement to this effect must be included for the relevant area(s) or portion(s) thereof.

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

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

ENR 2.2 Other regulated airspace
Where established, a detailed description of other types of regulated airspace and airspace classification.

ENR 3. ATS ROUTES

Note 1.— Bearings, tracks and radials are normally magnetic. In areas of high latitude, where it is determined by the
appropriate authority that reference to Magnetic North is impractical, another suitable reference, i.e. True North or Grid North, may be used.
Note 2.— Changeover points established at the midpoint between two radio navigation aids, or at the intersection of the two radials in the case of a route which changes direction between the navigation aids, need not be shown for each route segment if a general statement regarding their existence is made.

ENR 3.1 Lower ATS routes
Detailed description of lower ATS routes, including:

1. route designator, designation of the navigation specification(s) applicable to a specified segment(s), names, coded designators or name-codes and the geographical coordinates in degrees, minutes and seconds of all significant points defining the route including “compulsory” or “on-request” reporting points;
2. tracks or VOR radials to the nearest degree, geodesic distance to the nearest tenth of a kilometre or tenth of a nautical mile between each successive designated significant point and, in the case of VOR radials, changeover points;
3. upper and lower limits or minimum en-route altitudes, to the nearest higher 50 m or 100 ft, and airspace classification;
4. lateral limits and minimum obstacle clearance altitudes;
5. direction of cruising levels;
6. the navigation accuracy requirement for each PBN (RNAV or RNP) route segment; and
7. remarks, including an indication of the controlling unit, its operating channel and, if applicable, its logon address, and any navigation specification(s) limitations.

Note.— In relation to Annex 11, Appendix 1, and for flight planning purposes, the defined navigation specification is not considered to be an integral part of the route designator.

ENR 3.2 Upper ATS routes
Detailed description of upper ATS routes, including:

1. route designator, designation of the navigation specification(s) applicable to a specified segment(s), names, coded designators or name-codes and the geographical coordinates in degrees, minutes and seconds of all significant points defining the route including “compulsory” or “on-request” reporting points;
2. tracks or VOR radials to the nearest degree, geodesic distance to the nearest tenth of a kilometre or tenth of a nautical mile between each successive designated significant point and, in the case of VOR radials, changeover points;
3. upper and lower limits and airspace classification;
4. lateral limits;
5. direction of cruising levels;
6. the navigation accuracy requirement for each PBN (RNAV or RNP) route segment; and
7. remarks, including an indication of the controlling unit, its operating channel and, if applicable, its logon address, and any navigation specification(s) limitations.

Note.— In relation to Annex 11, Appendix 1, and for flight planning purposes, defined navigation specification is not considered to be an integral part of the route designator.

ENR 3.3 Area navigation routes

Detailed description of area navigation (RNAV) routes, including:

1. route designator, designation of the navigation specification(s) applicable to a specified segment(s), names, coded designators or name-codes and the geographical coordinates in degrees, minutes and seconds of all significant points defining the route including "compulsory" or "on-request" reporting points;
2. in respect of waypoints defining an area navigation route, additionally as applicable:
   a) station identification of the reference VOR/DME;
   b) bearing to the nearest degree and the distance to the nearest tenth of a kilometre or tenth of a nautical mile from the reference VOR/DME, if the waypoint is not collocated with it; and
   c) elevation of the transmitting antenna of DME to the nearest 30 m (100 ft);
3. geodesic distance to the nearest tenth of a kilometre or tenth of a nautical mile between defined end-points and distance between each successive designated significant point;
4. upper and lower limits and airspace classification;
5. direction of cruising levels;
6. the navigation accuracy requirement for each PBN (RNAV or RNP) route segment; and
7. remarks, including an indication of the controlling unit, its operating channel and, if applicable, its logon address, and any navigation specification(s) limitations.

Note.— In relation to Annex 11, Appendix 1, and for flight planning purposes, defined navigation specification is not considered to be an integral part of the route designator.

ENR 3.4 Helicopter routes

Detailed description of helicopter routes, including:

1. route designator, designation of the navigation specification(s) applicable to a specified segment(s), names, coded designators or name-codes and the geographical coordinates in degrees, minutes and seconds of all significant points defining the route including "compulsory" or "on-request" reporting points;
2. tracks or VOR radials to the nearest degree, geodesic distance to the nearest tenth of a kilometre or tenth of a nautical mile between each successive designated significant point and, in the case of VOR radials, changeover points;
3. upper and lower limits and airspace classification;
4. minimum flight altitudes to the nearest higher 50 m or 100 ft;
5. the navigation accuracy requirement for each PBN (RNAV or RNP) route segment; and
6. remarks, including an indication of the controlling unit and its operating frequency, and any navigation specification(s) limitations.

Note.— In relation to Annex 11, Appendix 1, and for flight planning purposes, defined navigation specification is not considered to be an integral part of the route designator.

ENR 3.5 Other routes

The requirement is to describe other specifically designated routes which are compulsory within specified area(s).

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

ENR 3.6 En-route holding

The requirement is for a detailed description of en-route holding procedures, containing:

1. holding identification (if any) and holding fix (navigation aid) or waypoint with geographical coordinates in degrees, minutes and seconds;
2. inbound track;
3. direction of the procedure turn;

4. maximum indicated airspeed;
5. minimum and maximum holding level;
6. time/distance outbound; and
7. indication of the controlling unit and its operating frequency.

Note.— Obstacle clearance criteria related to holding procedures are contained in Procedures for Air Navigation Services — Aircraft Operations *(PANS-OPS, Doc 8168), Volumes I and II.*

ENR 4. RADIO NAVIGATION AIDS/SYSTEMS

ENR 4.1 Radio navigation aids — en-route

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

1. name of the station and magnetic variation to the nearest degree and for VOR, station declination to the nearest degree used for technical line-up of the aid;
2. identification;
3. frequency/channel for each element;
4. hours of operation;
5. geographical coordinates in degrees, minutes and seconds of the position of the transmitting antenna;
6. elevation of the transmitting antenna of DME to the nearest 30 m (100 ft); and
7. remarks.

If the operating authority of the facility is other than the designated governmental agency, the name of the operating authority must be indicated in the remarks column. Facility coverage must be indicated in the remarks column.

ENR 4.2 Special navigation systems

Description of stations associated with special navigation systems (DECCA, LORAN, etc.), including:

1. name of station or chain;
2. type of service available (master signal, slave signal, colour);
3. frequency (channel number, basic pulse rate, recurrence rate, as applicable);
4. hours of operation;
5. geographical coordinates in degrees, minutes and seconds of the position of the transmitting station; and
6. remarks.

If the operating authority of the facility is other than the designated governmental agency, the name of the operating authority must be indicated in the remarks column. Facility coverage must be indicated in the remarks column.

ENR 4.3 Global navigation satellite system (GNSS)

A list and description of elements of the global navigation satellite system (GNSS) providing the navigation service established for en-route purposes and arranged alphabetically by name of the element, including:

1. the name of the GNSS element (GPS, GLONASS, EGNOS, MSAS, WAAS, etc.);
2. frequency(ies), as appropriate;
3. geographical coordinates in degrees, minutes and seconds of the nominal service area and coverage area; and
4. remarks.

If the operating authority of the facility is other than the designated governmental agency, the name of the operating authority must be indicated in the remarks column.

ENR 4.4 Name-code designators for significant points
An alphabetically arranged list of name-code designators (five-letter pronounceable "name-code") established for significant points at positions not marked by the site of radio navigation aids, including:

1. name-code designator;
2. geographical coordinates in degrees, minutes and seconds of the position;
3. reference to ATS or other routes where the point is located; and
4. remarks, including supplementary definition of positions where required.

ENR 4.5 Aeronautical ground lights — en-route
A list of aeronautical ground lights and other light beacons designating geographical positions which are selected by the State as being significant, including:

1. name of the city or town or other identification of the beacon;
2. type of beacon and intensity of the light in thousands of candelas;
3. characteristics of the signal;
4. operational hours; and
5. remarks.

ENR 5. NAVIGATION WARNINGS

ENR 5.1 Prohibited, restricted and danger areas
Description, supplemented by graphic portrayal where appropriate, of prohibited, restricted and danger areas together with information regarding their establishment and activation, including:

1. identification, name and geographical coordinates of the lateral limits in degrees, minutes and seconds if inside and in degrees and minutes if outside control area/control zone boundaries;
2. upper and lower limits; and
3. remarks, including time of activity.

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

ENR 5.2 Military exercise and training areas and air defence identification zone (ADIZ)
Description, supplemented by graphic portrayal where appropriate, of established military training areas and military exercises taking place at regular intervals, and established air defence identification zone (ADIZ), including:

1. geographical coordinates of the lateral limits in degrees, minutes and seconds if inside and in degrees and minutes if outside control area/control zone boundaries;
2. upper and lower limits and system and means of activation announcements together with information pertinent to civil flights and applicable ADIZ procedures; and remarks, including time of activity and risk of interception in the event of penetration of ADIZ.

ENR 5.3 Other activities of a dangerous nature and other potential hazards

ENR 5.3.1 Other activities of a dangerous nature
Description, supplemented by charts where appropriate, of activities that constitute a specific or obvious danger to aircraft operation and could affect flights including:

1. geographical coordinates in degrees and minutes of centre of area and range of influence;
2. vertical limits;
3. advisory measures;
4. authority responsible for the provision of information; and

5. remarks, including time of activity.

ENR 5.3.2 Other potential hazards
Description, supplemented by charts where appropriate, of other potential hazards that could affect flights (e.g. active volcanoes, nuclear power stations, etc.) including:

1. geographical coordinates in degrees and minutes of location of potential hazard;
2. vertical limits;
3. advisory measures;
4. authority responsible for the provision of information; and
5. remarks.

ENR 5.4 Air navigation obstacles
The list of obstacles affecting air navigation in Area 1 (the entire State territory), including:

1. obstacle identification or designation;
2. type of obstacle;
3. obstacle position, represented by geographical coordinates in degrees, minutes and seconds;
4. obstacle elevation and height to the nearest metre or foot;
5. type and colour of obstacle lighting (if any); and
6. if appropriate, an indication that the list of obstacles is available in electronic form, and a reference to GEN 3.1.6.

Note 1.— An obstacle whose height above the ground is 100 m and higher is considered an obstacle for Area 1.
Note 2.— Specifications governing the determination and reporting (accuracy of field work and data integrity) of positions (latitude and longitude) and elevations/heights for obstacles in Area 1 are given in Annex 11, Appendix 5, Tables 1 and 2, respectively.

ENR 5.5 Aerial sporting and recreational activities
Brief description, supplemented by graphic portrayal where appropriate, of intensive aerial sporting and recreational activities together with conditions under which they are carried out, including:

1. designation and geographical coordinates of the lateral limits in degrees, minutes and seconds if inside and in degrees and minutes if outside control area/control zone boundaries;
2. vertical limits;
3. operator/user telephone number; and
4. remarks, including time of activity.

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

ENR 5.6 Bird migration and areas with sensitive fauna
Description, supplemented by charts where practicable, of movements of birds associated with migration, including migration routes and permanent resting areas and areas with sensitive fauna.

ENR 6. EN-ROUTE CHARTS

The requirement is for the En-route Chart — ICAO and index charts to be included in this section.

PART 3 — AERODROMES (AD)

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

AD 0.6 Table of contents to Part 3
A list of sections and subsections contained in Part 3 — Aerodromes (AD).
Note.— Subsections may be listed alphabetically.

AD 1. AERODROMES/HELIPORTS — INTRODUCTION

AD 1.1 Aerodrome/heliport availability and conditions of use

AD 1.1.1 General conditions
Brief description of the State's designated authority responsible for aerodromes and heliports, including:

1. the general conditions under which aerodromes/heliports and associated facilities are available for use; and
2. a statement concerning the ICAO documents on which the services are based and a reference to the AIP location where differences, if any, are listed.

AD 1.1.2 Use of military air bases
Regulations and procedures, if any, concerning civil use of military air bases.

AD 1.1.3 Low visibility procedures (LVP)
The general conditions under which the low visibility procedures applicable to Cat II/III operations at aerodromes, if any, are applied.

AD 1.1.4 Aerodrome operating minima
Details of aerodrome operating minima applied by the State.

AD 1.1.5 Other information
If applicable, other information of a similar nature.

AD 1.2 Rescue and firefighting services and snow plan

AD 1.2.1 Rescue and firefighting services
Brief description of rules governing the establishment of rescue and firefighting services at aerodromes and heliports available for public use together with an indication of rescue and firefighting categories established by a State.

AD 1.2.2 Snow plan
Brief description of general snow plan considerations for aerodromes/heliports available for public use at which snow conditions are normally liable to occur, including:

1. organization of the winter service;
2. surveillance of movement areas;
3. measuring methods and measurements taken;
4. actions taken to maintain the usability of movement areas;
5. system and means of reporting;
6. the cases of runway closure; and
7. distribution of information about snow conditions.
8.

Note.— Where different snow plan considerations apply at aerodromes/heliports, this subparagraph may be subdivided accordingly.

AD 1.3 Index to aerodromes and heliports

A list, supplemented by graphic portrayal, of aerodromes and heliports within a State, including:

1. aerodrome/heliport name and ICAO location indicator;

2. type of traffic permitted to use the aerodrome/heliport (international/national, IFR/VFR, scheduled/non-scheduled, general aviation, military and other); and
3. reference to AIP, Part 3 subsection in which aerodrome/heliport details are presented.

AD 1.4 Grouping of aerodromes/heliports
Brief description of the criteria applied by the State in grouping aerodromes/heliports for production/distribution/provision of information purposes (e.g. international/national; primary/secondary; major/other; civil/military; etc.).

AD 1.5 Status of certification of aerodromes
A list of aerodromes in the State, indicating the status of certification, including:

1. aerodrome name and ICAO location indicator;
2. date and, if applicable, validity of certification; and
3. remarks, if any.

AD 2. AERODROMES

***Note.*— OBBI is to be replaced by the relevant ICAO location indicator.**

OBBI AD 2.1 Aerodrome location indicator and name
The requirement is for the ICAO location indicator allocated to the aerodrome and the name of aerodrome. An ICAO location indicator must be an integral part of the referencing system applicable to all subsections in section AD 2.

OBBI AD 2.2 Aerodrome geographical and administrative data
The requirement is for aerodrome geographical and administrative data including:

1. aerodrome reference point (geographical coordinates in degrees, minutes and seconds) and its site;
2. direction and distance of aerodrome reference point from centre of the city or town which the aerodrome serves;
3. aerodrome elevation to the nearest metre or foot, and reference temperature;
4. where appropriate, geoid undulation at the aerodrome elevation position to the nearest metre or foot;
5. magnetic variation to the nearest degree, date of information and annual change;
6. name of aerodrome operator, address, telephone and telefax numbers, e-mail address, AFS address and, if available, website address;
7. types of traffic permitted to use the aerodrome (IFR/VFR); and
8. remarks.

OBBI AD 2.3 Operational hours
Detailed description of the hours of operation of services at the aerodrome, including:

1. aerodrome operator;
2. customs and immigration;
3. health and sanitation;
4. AIS briefing office;
5. ATS reporting office (ARO);
6. MET briefing office;
7. air traffic service;
8. fuelling;
9. handling;
10. security;
11. de-icing; and

12. remarks.

OBBI AD 2.4 Handling services and facilities

Detailed description of the handling services and facilities available at the aerodrome, including:

1. cargo-handling facilities;
2. fuel and oil types;
3. fuelling facilities and capacity;
4. de-icing facilities;
5. hangar space for visiting aircraft;
6. repair facilities for visiting aircraft; and
7. remarks.

OBBI AD 2.5 Passenger facilities

Passenger facilities available at the aerodrome, provided as a brief description or a reference to other information sources such as a website including:

1. *hotel(s) at or in the vicinity of aerodrome;*
2. *restaurant(s) at or in the vicinity of aerodrome;*
3. *transportation possibilities;*
4. medical facilities;
5. *bank and post office at or in the vicinity of aerodrome;*
6. *tourist office;* and
7. remarks.

OBBI AD 2.6 Rescue and firefighting services

Detailed description of the rescue and firefighting services and equipment available at the aerodrome, including:

1. aerodrome category for firefighting;
2. rescue equipment;
3. *capability for removal of disabled aircraft;* and
4. remarks.

OBBI AD 2.7 Seasonal availability — clearing

Detailed description of the equipment and operational priorities established for the clearance of aerodrome movement areas, including:

1. type(s) of clearing equipment;
2. clearance priorities; and
3. remarks.

OBBI AD 2.8 Aprons, taxiways and check locations/positions data

Details related to the physical characteristics of aprons, taxiways and locations/positions of designated checkpoints, including:

1. designation, surface and strength of aprons;
2. designation, width, surface and strength of taxiways;
3. location and elevation to the nearest metre or foot of altimeter checkpoints;
4. location of VOR checkpoints;
5. position of INS checkpoints in degrees, minutes, seconds and hundredths of seconds; and
6. remarks.

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

OBBI AD 2.9 Surface movement guidance and control system and markings

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

1. use of aircraft stand identification signs, taxiway guide lines and visual docking/parking guidance system at aircraft stands;
2. runway and taxiway markings and lights;
3. stop bars (if any); and
4. remarks.

OBBI AD 2.10 Aerodrome obstacles

Detailed description of obstacles, including:

1. obstacles in Area 2:
   a) obstacle identification or designation;
   b) type of obstacle;
   c) obstacle position, represented by geographical coordinates in degrees, minutes, seconds and tenths of seconds;
   d) obstacle elevation and height to the nearest metre or foot;
   e) obstacle marking, and type and colour of obstacle lighting (if any);
   f) if appropriate, an indication that the list of obstacles is available in electronic form, and a reference to GEN 3.1.6; and
   g) NIL indication, if appropriate.

Note 1.— Chapter 10, 10.1.1, provides a description of Area 2 while Appendix 8, Figure A8-2, contains graphical illustrations of obstacle data collection surfaces and criteria used to identify obstacles in Area 2.
Note 2.— Specifications governing the determination and reporting (accuracy of field work and data integrity) of positions (latitude and longitude) and elevations for obstacles in Area 2 are given in Annex 11, Appendix 5, Tables 1 and 2,
and in Annex 14, Volume I, Appendix 5, Tables A5-1 and A5-2, respectively.

2) the absence of an Area 2 data set for the aerodrome is to be clearly stated and obstacle data are to be provided for:
   a) obstacles that penetrate the obstacle limitation surfaces;
   b) obstacles that penetrate the take-off flight path area obstacle identification surface; and
   c) other obstacles assessed as being hazardous to air navigation.
   d) 3) indication that information on obstacles in Area 3 is not provided, or if provided:
   e) obstacle identification or designation;
   f) type of obstacle;
   g) obstacle position, represented by geographical coordinates in degrees, minutes, seconds and tenths of seconds;
   h) obstacle elevation and height to the nearest tenth of a metre or tenth of a foot;
   i) obstacle marking, and type and colour of obstacle lighting (if any);
   j) if appropriate, an indication that the list of obstacles is available in electronic form, and a reference to GEN 3.1.6; and
   k) NIL indication, if appropriate.

Note 1.— Chapter 10, 10.1.1, provides a description of Area 3 while Appendix 8, Figure A8-3, contains graphical illustrations of obstacle data collection surfaces and criteria used to identify obstacles in Area 3.
Note 2.— Specifications governing the determination and reporting (accuracy of field work and data integrity) of positions (latitude and longitude) and elevations for obstacles in Area 3 are given in Annex 14, Volume I, Appendix 5, Tables A5-1 and A5-2, respectively.

OBBI AD 2.11 Meteorological information provided

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

1. name of the associated meteorological office;
2. hours of service and, where applicable, the designation of the responsible meteorological office outside these hours;

3. office responsible for preparation of TAFs and periods of validity and interval of issuance of the forecasts;
4. availability of the trend forecasts for the aerodrome, and interval of issuance;
5. information on how briefing and/or consultation is provided;
6. types of flight documentation supplied and language(s) used in flight documentation;
7. charts and other information displayed or available for briefing or consultation;
8. supplementary equipment available for providing information on meteorological conditions, e.g. weather radar and receiver for satellite images;
9. the air traffic services unit(s) provided with meteorological information; and
10. additional information (e.g. concerning any limitation of service, etc.).

OBBI AD 2.12 Runway physical characteristics

Detailed description of runway physical characteristics, for each runway, including:

1. designations;
2. true bearings to one-hundredth of a degree;
3. dimensions of runways to the nearest metre or foot;
4. strength of pavement (PCN and associated data) and surface of each runway and associated stopways;
5. geographical coordinates in degrees, minutes, seconds and hundredths of seconds for each threshold and runway end and, where appropriate, geoid undulation of:
    i. thresholds of a non-precision approach runway to the nearest metre or foot; and
    ii. thresholds of a precision approach runway to the nearest tenth of a metre or tenth of a foot;
6. elevations of:
    i. thresholds of a non-precision approach runway to the nearest metre or foot; and
    ii. thresholds and the highest elevation of the touchdown zone of a precision approach runway to the nearest tenth of a metre or tenth of a foot;
7. slope of each runway and associated stopways;
8. dimensions of stopway (if any) to the nearest metre or foot;
9. dimensions of clearway (if any) to the nearest metre or foot;
10. dimensions of strips;
11. the existence of an obstacle-free zone; and
12. remarks.

OBBI AD 2.13 Declared distances

Detailed description of declared distances to the nearest metre or foot for each direction of each runway, including:

1. runway designator;
2. take-off run available;
3. take-off distance available, and if applicable, alternative reduced declared distances;
4. accelerate-stop distance available;
5. landing distance available; and
6. remarks, including runway entry or start point where alternative reduced declared distances have been declared.

If a runway direction cannot be used for take-off or landing, or both, because it is operationally forbidden, then this must be declared and the words “not usable” or the abbreviation “NU” entered (Annex 14, Volume I, Attachment A, Section 3).

OBBI AD 2.14 Approach and runway lighting

Detailed description of approach and runway lighting, including:

1. runway designator;
2. type, length and intensity of approach lighting system;
3. runway threshold lights, colour and wing bars;
4. type of visual approach slope indicator system;
5. length of runway touchdown zone lights;

6. length, spacing, colour and intensity of runway centre line lights;
7. length, spacing, colour and intensity of runway edge lights;
8. colour of runway end lights and wing bars;
9. length and colour of stopway lights; and
10. remarks.

OBBI AD 2.15 Other lighting, secondary power supply

Description of other lighting and secondary power supply, including:

1. location, characteristics and hours of operation of aerodrome beacon/identification beacon (if any);
2. location and lighting (if any) of anemometer/landing direction indicator;
3. taxiway edge and taxiway centre line lights;
4. secondary power supply including switch-over time; and
5. remarks.

OBBI AD 2.16 Helicopter landing area

Detailed description of helicopter landing area provided at the aerodrome, including:

1. geographical coordinates in degrees, minutes, seconds and hundredths of seconds and, where appropriate, geoid undulation of the geometric centre of touchdown and lift-off (TLOF) or of each threshold of final approach and take-off (FATO) area:
    i. for non-precision approaches, to the nearest metre or foot; and
    ii. for precision approaches, to the nearest tenth of a metre or tenth of a foot;
2. TLOF and/or FATO area elevation:
    i. for non-precision approaches, to the nearest metre or foot; and
    ii. for precision approaches, to the nearest tenth of a metre or tenth of a foot;
3. TLOF and FATO area dimensions to the nearest metre or foot, surface type, bearing strength and marking;
4. true bearings to one-hundredth of a degree of FATO;
5. declared distances available, to the nearest metre or foot;
6. approach and FATO lighting; and
7. remarks.

OBBI AD 2.17 Air traffic services airspace

Detailed description of air traffic services (ATS) airspace organized at the aerodrome, including:

1. airspace designation and geographical coordinates in degrees, minutes and seconds of the lateral limits;
2. vertical limits;
3. airspace classification;
4. call sign and language(s) of the ATS unit providing service;
5. transition altitude;
6. hours of applicability; and
7. remarks.

OBBI AD 2.18 Air traffic services communication facilities

Detailed description of air traffic services communication facilities established at the aerodrome, including:

1. service designation;
2. call sign;
3. channel(s);
4. logon address, as appropriate;
5. hours of operation; and
6. remarks.

OBBI AD 2.19 Radio navigation and landing aids

Detailed description of radio navigation and landing aids associated with the instrument approach and the terminal area procedures at the aerodrome, including:

1. type of aids, magnetic variation to the nearest degree, as appropriate, and type of supported operation for ILS/MLS, basic GNSS, SBAS, and GBAS and for VOR/ILS/MLS also station declination to the nearest degree used for technical line-up of the aid;
2. identification, if required;
3. frequency(ies), as appropriate;
4. hours of operation, as appropriate;
5. geographical coordinates in degrees, minutes, seconds and tenths of seconds of the position of the transmitting antenna, as appropriate;
6. elevation of the transmitting antenna of DME to the nearest 30 m (100 ft) and of DME/P to the nearest 3 m (10 ft); and
7. remarks.

When the same aid is used for both en-route and aerodrome purposes, a description must also be given in section ENR 4. If the ground-based augmentation system (GBAS) serves more than one aerodrome, description of the aid must be provided under each aerodrome. If the operating authority of the facility is other than the designated governmental agency, the name of the operating authority must be indicated in the remarks column. Facility coverage must be indicated in the remarks column.

OBBI AD 2.20 Local aerodrome regulations

Detailed description of regulations applicable to the use of the aerodrome including the acceptability of training flights, nonradio and microlight aircraft and similar, and to ground manoeuvring and parking but excluding flight procedures.

OBBI AD 2.21 Noise abatement procedures

Detailed description of noise abatement procedures established at the aerodrome.

OBBI AD 2.22 Flight procedures

Detailed description of the conditions and flight procedures, including radar and/or ADS-B procedures, established on the basis of airspace organization at the aerodrome. When established, detailed description of the low visibility procedures at the aerodrome, including:

1. runway(s) and associated equipment authorized for use under low visibility procedures;
2. defined meteorological conditions under which initiation, use and termination of low visibility procedures would be made;
3. description of ground marking/lighting for use under low visibility procedures; and
4. remarks.

OBBI AD 2.23 Additional information

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

OBBI AD 2.24 Charts related to an aerodrome

The requirement is for charts related to an aerodrome to be included in the following order:

1. Aerodrome/Heliport Chart — ICAO;
2. Aircraft Parking/Docking Chart — ICAO;
3. Aerodrome Ground Movement Chart — ICAO;
4. Aerodrome Obstacle Chart — ICAO Type A (for each runway);
5. Aerodrome Terrain and Obstacle Chart — ICAO (Electronic);
6. Precision Approach Terrain Chart — ICAO (precision approach Cat II and III runways);
7. Area Chart — ICAO (departure and transit routes);
8. Standard Departure Chart — Instrument — ICAO;
9. Area Chart — ICAO (arrival and transit routes);

10. Standard Arrival Chart — Instrument — ICAO;
11. ATC Surveillance Minimum Altitude Chart — ICAO;
12. Instrument Approach Chart — ICAO (for each runway and procedure type);
13. Visual Approach Chart — ICAO; and
14. bird concentrations in the vicinity of the aerodrome.

If some of the charts are not produced, a statement to this effect must be given in section GEN 3.2, Aeronautical charts.
Note.— A page pocket may be used in the AIP to include the Aerodrome Terrain and Obstacle Chart — ICAO (Electronic) on appropriate electronic media.

AD 3. HELIPORTS
When a helicopter landing area is provided at the aerodrome, associated data must be listed only under OBBI AD 2.16.

OBBI AD 3.1 Heliport location indicator and name
The requirement is for the ICAO location indicator assigned to the heliport and the name of heliport. An ICAO location indicator must be an integral part of the referencing system applicable to all subsections in section AD 3.

OBBI AD 3.2 Heliport geographical and administrative data
The requirement is for heliport geographical and administrative data, including:

1. heliport reference point (geographical coordinates in degrees, minutes and seconds) and its site;
2. direction and distance of heliport reference point from centre of the city or town which the heliport serves;
3. heliport elevation to the nearest metre or foot, and reference temperature;
4. where appropriate, geoid undulation at the heliport elevation position to the nearest metre or foot;
5. magnetic variation to the nearest degree, date of information and annual change;
6. name of heliport operator, address, telephone and telefax numbers, e-mail address, AFS address and, if available, website address;
7. types of traffic permitted to use the heliport (IFR/VFR); and
8. remarks.

OBBI AD 3.3 Operational hours
Detailed description of the hours of operation of services at the heliport, including:

1. heliport operator;
2. customs and immigration;
3. health and sanitation;
4. AIS briefing office;
5. ATS reporting office (ARO);
6. MET briefing office;
7. air traffic service;
8. fuelling;
9. handling;
10. security;
11. de-icing; and
12. remarks

OBBI AD 3.4 Handling services and facilities
Detailed description of the handling services and facilities available at the heliport, including:

1. cargo-handling facilities;
2. fuel and oil types;

3. fuelling facilities and capacity;
4. de-icing facilities;
5. hangar space for visiting helicopter;
6. repair facilities for visiting helicopter; and
7. remarks

OBBI AD 3.5 Passenger facilities

Passenger facilities available at the heliport, provided as a brief description or as a reference to other information sources such as a website, including:

1. *hotel(s) at or in the vicinity of the heliport;*
2. *restaurant(s) at or in the vicinity of the heliport;*
3. *transportation possibilities;*
4. medical facilities;
5. *bank and post office at or in the vicinity of the heliport;*
6. *tourist office;* and
7. remarks

OBBI AD 3.6 Rescue and firefighting services

Detailed description of the rescue and firefighting services and equipment available at the heliport, including:

1. heliport category for firefighting;
2. rescue equipment;
3. *capability for removal of disabled helicopter; and*
4. remarks

OBBI AD 3.7 Seasonal availability — clearing

Detailed description of the equipment and operational priorities established for the clearance of heliport movement areas, including:

1. type(s) of clearing equipment;
2. clearance priorities; and
3. remarks

OBBI AD 3.8 Aprons, taxiways and check locations/positions data

Details related to the physical characteristics of aprons, taxiways and locations/positions of designated checkpoints, including:

1. designation, surface and strength of aprons, helicopter stands;
2. designation, width, and surface type of helicopter ground taxiways;
3. width and designation of helicopter air taxiway and air transit route;
4. location and elevation to the nearest metre or foot of altimeter checkpoints;
5. location of VOR checkpoints;
6. position of INS checkpoints in degrees, minutes, seconds and hundredths of seconds; and
7. remarks

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

OBBI AD 3.9 Markings and markers

Brief description of final approach and take-off area and taxiway markings and markers, including:

1. final approach and take-off markings;
2. taxiway markings, air taxiway markers and air transit route markers; and
3. remarks

OBBI AD 3.10 Heliport obstacles

Detailed description of obstacles, including:

1. obstacle identification or designation;

2. type of obstacle;
3. obstacle position, represented by geographical coordinates in degrees, minutes, seconds and tenths of seconds;
4. obstacle elevation and height to the nearest metre or foot;
5. obstacle marking, and type and colour of obstacle lighting (if any);
6. if appropriate, an indication that the list of obstacles is available in electronic form, and a reference to GEN 3.1.6; and
7. NIL indication, if appropriate.

OBBI AD 3.11 Meteorological information provided

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

1. name of the associated meteorological office;
2. hours of service and, where applicable, the designation of the responsible meteorological office outside these hours;
3. office responsible for preparation of TAFs, and periods of validity of the forecasts;
4. availability of the trend forecasts for the heliport, and interval of issuance;
5. information on how briefing and/or consultation is provided;
6. type of flight documentation supplied and language(s) used in flight documentation;
7. charts and other information displayed or available for briefing or consultation;
8. supplementary equipment available for providing information on meteorological conditions, e.g. weather radar and receiver for satellite images;
9. the air traffic services unit(s) provided with meteorological information; and
10. Additional information (e.g. concerning any limitation of service, etc.).

OBBI AD 3.12 Heliport data

Detailed description of heliport dimensions and related information, including:

1. heliport type — surface-level, elevated or helideck;
2. touchdown and lift-off (TLOF) area dimensions to the nearest metre or foot;
3. true bearings to one-hundredth of a degree of final approach and take-off (FATO) area;
4. dimensions to the nearest metre or foot of FATO, and surface type;
5. surface and bearing strength in tonnes (1 000 kg) of TLOF;
6. geographical coordinates in degrees, minutes, seconds and hundredths of seconds and, where appropriate, geoid undulation of the geometric centre of TLOF or of each threshold of FATO:
    i. for non-precision approaches, to the nearest metre or foot; and
    ii. for precision approaches, to the nearest tenth of a metre or tenth of a foot;
7. TLOF and/or FATO slope and elevation:
    i. for non-precision approaches, to the nearest metre or foot; and
    ii. for precision approaches, to the nearest tenth of a metre or tenth of a foot;
8. dimensions of safety area;
9. dimensions, to the nearest metre or foot, of helicopter clearway;
10. the existence of an obstacle-free sector; and
11. remarks

OBBI AD 3.13 Declared distances

Detailed description of declared distances to the nearest metre or foot, where relevant for a heliport, including:

1. take-off distance available, and if applicable, alternative reduced declared distances;
2. rejected take-off distance available;
3. landing distance available; and
4. remarks, including entry or start point where alternative reduced declared distances have been declared.

OBBI AD 3.14 Approach and FATO lighting

Detailed description of approach and FATO lighting, including:

1. type, length and intensity of approach lighting system;
2. type of visual approach slope indicator system;
3. characteristics and location of FATO area lights;
4. characteristics and location of aiming point lights;
5. characteristics and location of TLOF lighting system; and
6. remarks

OBBI AD 3.15 Other lighting, secondary power supply

Description of other lighting and secondary power supply, including:

1. location, characteristics and hours of operation of heliport beacon;
2. location and lighting of wind direction indicator (WDI);
3. taxiway edge and taxiway centre line lights;
4. secondary power supply including switch-over time; and
5. remarks.

OBBI AD 3.16 Air traffic services airspace

Detailed description of air traffic services (ATS) airspace organized at the heliport, including:

1. airspace designation and geographical coordinates in degrees, minutes and seconds of the lateral limits;
2. vertical limits;
3. airspace classification;
4. call sign and language(s) of ATS unit providing service;
5. transition altitude;
6. hours of applicability; and
7. remarks

OBBI AD 3.17 Air traffic services communication facilities

Detailed description of air traffic services communication facilities established at the heliport, including:

1. service designation;
2. call sign;
3. frequency(ies);
4. hours of operation; and
5. remarks

OBBI AD 3.18 Radio navigation and landing aids

Detailed description of radio navigation and landing aids associated with the instrument approach and the terminal area procedures at the heliport, including:

1. type of aids, magnetic variation (for VOR, station declination used for technical line-up of the aid) to the nearest degree, and type of operation for ILS, MLS, basic GNSS, SBAS and GBAS;
2. identification, if required;
3. frequency(ies), as appropriate;
4. hours of operation, as appropriate;
5. geographical coordinates in degrees, minutes, seconds and tenths of seconds of the position of the transmitting antenna, as appropriate;
6. elevation of the transmitting antenna of DME to the nearest 30 m (100 ft) and of DME/P to the nearest 3 m (10 ft); and
7. remark

When the same aid is used for both en-route and heliport purposes, a description must also be given in section ENR 4. If the ground-based augmentation system (GBAS) serves more than one heliport, description of the aid must be provided under each heliport. If the operating authority of the facility is other than the designated governmental agency, the name of the operating authority must be indicated in the remarks column. Facility coverage must be indicated in the remarks column.

OBBI AD 3.19 Local heliport regulations
Detailed description of regulations applicable to the use of the heliport, including the acceptability of training flights, nonradio and microlight aircraft and similar, and to ground manoeuvring and parking but excluding flight procedures.

OBBI AD 3.20 Noise abatement procedures
Detailed description of noise abatement procedures established at the heliport.

OBBI AD 3.21 Flight procedures
Detailed description of the conditions and flight procedures, including radar and/or ADS-B procedures, established on the basis of airspace organization established at the heliport. When established, detailed description of the low visibility procedures at the heliport, including:

1. touchdown and lift-off (TLOF) area(s) and associated equipment authorized for use under low visibility procedures;
2. defined meteorological conditions under which initiation, use and termination of low visibility procedures would be made;
3. description of ground marking/lighting for use under low visibility procedures; and
4. remarks

OBBI AD 3.22 Additional information
Additional information about the heliport, such as an indication of bird concentrations at the heliport together with an indication of significant daily movement between resting and feeding areas, to the extent practicable.

OBBI AD 3.23 Charts related to a heliport
The requirement is for charts related to a heliport to be included in the following order:

1. Aerodrome/Heliport Chart — ICAO;
2. Area Chart — ICAO (departure and transit routes);
3. Standard Departure Chart — Instrument — ICAO;
4. Area Chart — ICAO (arrival and transit routes);
5. Standard Arrival Chart — Instrument — ICAO;
6. ATC Surveillance Minimum Altitude Chart — ICAO;
7. Instrument Approach Chart — ICAO (for each procedure type);
8. Visual Approach Chart — ICAO; and
9. bird concentrations in the vicinity of heliport

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

APPENDIX 2 *(INTENTIONALLY LEFT BLANK)*

APPENDIX 3
ASHTAM FORMAT

(Refer to ICAO Annex 15 Appendix 3)

APPENDIX 4
INFORMATION TO BE NOTIFIED BY AIRAC

(see Chapter 6, 6.1.1)

PART 1

1. The establishment and withdrawal of, and premeditated significant changes (including operational trials) to:

1.1 Limits (horizontal and vertical), regulations and procedures applicable to:

a) flight information regions;

b) control areas;

c) control zones;
d) advisory areas;
e) ATS routes;
f) permanent danger, prohibited and restricted areas (including type and periods of activity when known) and ADIZ;
g) permanent areas or routes or portions thereof where the possibility of interception exists.

1.2 Positions, frequencies, call signs, identifiers, known irregularities and maintenance periods of radio navigation aids, and communication and surveillance facilities.
1.3 Holding and approach procedures, arrival and departure procedures, noise abatement procedures and any other pertinent ATS procedures.
1.4 Transition levels, transition altitudes and minimum sector altitudes.
1.5 Meteorological facilities (including broadcasts) and procedures.
1.6 Runways and stopways.
1.7 Taxiways and aprons.
1.8 Aerodrome ground operating procedures (including low visibility procedures).
1.9 Approach and runway lighting.
1.10 Aerodrome operating minima if published by CAA.

PART 2

2. The establishment and withdrawal of, and premeditated significant changes to:
2.1 Position, height and lighting of navigational obstacles.
2.2 Hours of service of aerodromes, facilities and services.
2.3 Customs, immigration and health services.
2.4 Temporary danger prohibited and restricted areas and navigational hazards, military exercises and mass movements of aircraft.
2.5 Temporary areas or routes or portions thereof where the possibility of interception exists.

PART 3

3. The establishment of, and premeditated major changes to:
3.1 New aerodromes for international IFR operations.
3.2 New runways for IFR operations at international aerodromes.
3.3 Design and structure of the air traffic services route network.
3.4 Design and structure of a set of terminal procedures (including change of procedure bearings due to magnetic variation change).
3.5 Circumstances listed in Part 1 if the entire State or any significant portion thereof is affected or if cross-border coordination is required.

APPENDIX 5
PREDETERMINED DISTRIBUTION SYSTEM FOR NOTAM

(see Chapter 5, 5.3.4.2, and Annex 10, Volume II, Chapter 4, 4.4.14)

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

2. The addressee indicators for those designated addressees are constituted as follows:
1) *First and second letters*:

The first two letters of the location indicator for the AFS communication centre associated with the relevant international NOTAM office of the receiving country.
2) *Third and fourth letters:*
The letters “ZZ” indicating a requirement for special distribution.
3) *Fifth letter:*
The fifth letter differentiating between NOTAM (letter “N”), SNOWTAM (letter “S”), and ASHTAM (letter “V”).
4) *Sixth and seventh letters:*
The sixth and seventh letters, each taken from the series A to Z and denoting the national and/or international distribution list(s) to be used by the receiving AFS centre.

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

5) *Eighth letter:*
The eighth position letter shall be the filler letter “X” to complete the eight-letter addressee indicator.

3. States are to inform the States from which they receive NOTAM of the sixth and seventh letters to be used under different circumstances to ensure proper routing.

APPENDIX 6
NOTAM FORMAT

1. NOTAM’S shall be formatted as per ICAO Annex 15 Appendix 6.

APPENDIX 7
AERONAUTICAL DATA PUBLICATION RESOLUTION AND INTEGRITY CLASSIFICATION

Table A7-1. Latitude and longitude

Latitude and longitude
Publication
resolution
Integrity
classification

Flight information region boundary points ..... 1 min 1 × 10–3
routine
P, R, D area boundary points (outside CTA/CTR boundaries) ..... 1 min 1 × 10–3
routine
P, R, D area boundary points (inside CTA/CTR boundaries) ..... 1 sec 1 × 10–5
essential
CTA/CTR boundary points ..... 1 sec 1 × 10–5
essential
En-route NAVAIDS, intersections and waypoints, and holding, and STAR/SID points ..... 1 sec 1 × 10–5
essential
Obstacles in Area 1 (the entire State territory) ..... 1 sec 1 × 10–3
routine
Aerodrome/heliport reference point ..... 1 sec 1 × 10–3
routine
NAVAIDS located at the aerodrome/heliport ..... 1/10 sec 1 × 10–5
essential
Obstacles in Area 3 ..... 1/10 sec 1 × 10–5
essential
Obstacles in Area 2 ..... 1/10 sec 1 × 10–5
essential
Final approach fixes/points and other essential fixes/points comprising the instrument approach procedure ..... 1/10 sec 1 × 10–5
essential
Runway threshold ..... 1/100 sec 1 × 10–8
critical
Runway end ..... 1/100 sec 1 × 10–8
critical
Runway holding position ..... 1/100 sec 1 × 10–8
critical
Taxiway centre line/parking guidance line points ..... 1/100 sec 1 × 10–5
essential
Taxiway intersection marking line ..... 1/100 sec 1 × 10–5
essentialExit guidance line ..... 1/100 sec 1 × 10–5
essential
Aircraft stand points/INS checkpoints ..... 1/100 sec 1 × 10–3
routine

Geometric centre of TLOF or FATO thresholds, heliports ..... 1/100 sec 1 × 10–8 critical
Apron boundaries (polygon) ..... 1/10 sec 1 × 10–3 routine
De-icing/anti-icing facility (polygon) ..... 1/10 sec 1 × 10–3 Routine

Table A7-2. Elevation/altitude/height

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

Table A7-3. Declination and magnetic variation

Declination/variation Publication resolution Integrity classification

VHF NAVAID station declination used for technical line-up ..... 1 degree 1 × 10–5
essential
NDB NAVAID magnetic variation ..... 1 degree 1 × 10–3
routine
Aerodrome/heliport magnetic variation ..... 1 degree 1 × 10–5
essential
ILS localizer antenna magnetic variation ..... 1 degree 1 × 10–5
essential
MLS azimuth antenna magnetic variation ..... 1 degree 1 × 10–5
Essential

Table A7-4. Bearing

Bearing
Publication
resolution
Integrity
classification
Airway segments ..... 1 degree
routine
Bearing used for the formation of an en-route and a terminal fix ..... 1/10 degree routine
Terminal arrival/departure route segments ..... 1 degree
routine
Bearing used for the formation of an instrument approach procedure fix ..... 1/100 degree essential
ILS localizer alignment (True)..... 1/100 degree essential
MLS zero azimuth alignment (True) ..... 1/100 degree essential
Runway and FATO bearing (True) ..... 1/100 degree routine

Table A7-5. Length/distance/dimension

Length/distance/dimension
Publication
Airway segment length ..... 1/10 km or 1/10 NM routine
Distance used for the formation of an en-route fix..... 1/10 kmor 1/10 NM routine
Terminal arrival/departure route segment length ..... 1/100 kmor 1/100 NM1 × 10–5 essential
Distance used for the formation of a terminal and instrument approach procedure fix ..... 1/100 km or 1/100 NM essential
Runway and FATO length, TLOF dimensions ..... 1 m or 1 ft critical

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

APPENDIX 8
TERRAIN AND OBSTACLE DATA REQUIREMENTS

1. Terrain and obstacle clearance requirements shall be as represented in ICAO Annex 15 Appendix 8.