REPUBLIC OF MAURITIUS
DEPARTMENT OF CIVIL AVIATION
Sir Seewoosagur Ramgoolam International Airport, Plaine Magnien

MAURITIUS CIVIL AVIATION REQUIREMENTS

MCAR AIS

Aeronautical Information Services

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FOREWORD

The purpose of MCAR AIS, is to ensure the flow of information/data necessary for the safety, regularity and efficiency of international air navigation. The role and importance of aeronautical information/data changed significantly with the implementation of area navigation (RNAV), performance-based navigation (PBN), airborne computer-based navigation systems and data link systems. Corrupt or erroneous aeronautical information/data can potentially affect the safety of air navigation.

This MCAR is to be used in conjunction with the Procedures for Air Navigation Services — ICAO Abbreviations and Codes (PANS-ABC, Doc 8400), Aeronautical Information Services Manual (Doc. 8126) and The Procedures for Air Navigation Services - Aeronautical Information Management (PANS AIM, Doc. 10066).

MCAR AIS "Aeronautical Information Services" Issue 1, Rev 0 was issued under the provisions of Regulation 135 of the Civil Aviation Regulations as amended and replaces the requirements prescribed in Civil Air Navigation Requirements of Mauritius (CANRM), Section 2: Air Navigation, Series A: Air Traffic Management, Part III Aeronautical Information Services, Edition 2-rev 0, dated March 2015.

MCAR AIS-Issue 1 Rev 0 was based on the provisions of ICAO Annex 15 "Aeronautical Information Services", 16th edition, amendment 42 dated 4 of November 2021.

This MCAR AIS, Issue 1 Rev 1 is based on the provisions of ICAO Annex 15 "Aeronautical Information Services", 16th edition, amendment 43 dated 28 of November 2024.

This MCAR AIS Issue 1 Rev 1 will be effective as from 28 November 2024.

I POKHUN
Director of Civil Aviation

ISSUE AND REVISION SYSTEM

THE REVISIONS TO THIS REQUIREMENT WILL BE INDICATED BY A VERTICAL BAR ON THE LEFT SIDE, IN FRONT OF THE LINE, SECTION OR FIGURE THAT HAS BEEN AFFECTED. AN ISSUE WILL BE THE REPLACEMENT OF THE COMPLETE DOCUMENT.

THESE REVISIONS MUST BE RECORDED ON THE RECORD OF REVISIONS TABLE OF THIS DOCUMENT, INDICATING THE RESPECTIVE NUMBER, DATE IT WAS ENTERED AND SIGNED BY THE PERSON ENTERING THE REVISION.

RECORD OF REVISIONS

REV NO.	DATE	INSERTED BY
Issue 1, rev. 0	23 November 2023	ANS Inspector
Revision 1	08 November 2024	ANS Inspector

NOTE

The content of this document is arranged as follows:

The main requirements appear first, followed by the related acceptable means of compliance (AMC), even though this MCAR does not have any, and guidance material (GM) paragraph(s).

All elements (i.e. Requirement, AMC and GM) are colour-coded and can be identified according to the illustration below:

Requirements

Acceptable means of compliance

Guidance Material

TABLE OF CONTENT

GENERAL REQUIREMENTS

AIS.001 General Applicability

This MCAR AIS Requirement establishes the Standards to be met by an Aeronautical Information Services providers, whether they are service providers from the State of Mauritius or an independent Aeronautical Information Services provider.

AIS.005 Mauritius Responsibilities

(1) The State of Mauritius through the Department of Civil Aviation shall:

(a) Ensure that an Aeronautical Information Service (AIS) is provided; 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 Standards of this Requirement are adequately met.

(2) The Department of Civil Aviation shall ensure that the provision of aeronautical data and aeronautical information covers all its territory and those areas over the high seas for which it is responsible for the provision of air traffic services (ATS).

(3) The Department of Civil Aviation shall remain responsible for the aeronautical data and aeronautical information provided in accordance with AIS.005 (2). Aeronautical data and aeronautical information provided for and on behalf of Mauritius shall clearly indicate that they are provided under the authority of Mauritius, irrespective of the format in which they are provided.

(4) The AIS provider shall ensure that the aeronautical data and aeronautical information provided are of required quality in accordance with AIS.045.

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

GM AIS.005 Mauritius Responsibilities

The scope of aeronautical data and aeronautical information that would be the subject of formal arrangements is specified in Chapter 3 of this MCAR.

AIS.010 Common reference systems for air navigation

(1) Horizontal reference system

(a) The World Geodetic System — 1984 (WGS-84)

WGS-84 shall be used in Mauritius as the horizontal (geodetic) reference system for international air navigation. Consequently, published aeronautical geographical

coordinates (indicating latitud and longitude) shall be expressed in terms of the WGS-84 geodetic reference datum.

(b) Geodetic applications

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.

(2) Vertical reference system

(a) Mean sea level (MSL)

MSL datum shall be used in Mauritius as the vertical reference system for international air navigation.

(b) The Earth Gravitational Model — 1996 (EGM-96)

EGM-96 shall be used as the global gravity model for international air navigation.

(c) Accuracy of EGM-96

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).

(3) Temporal reference system

(a) Gregorian calendar and Coordinated Universal Time (UTC)

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

(b) Different temporal reference system

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.

GM AIS.010 Common reference systems for air navigation

(1) Horizontal reference system

(a) The World Geodetic System — 1984 (WGS-84)

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

(b) Geodetic applications

(i) The latest version of the WGS-84 (G2139) reference frame is realized through coordinates of 17 GPS tracking stations which are part of the GPS Control Segment. They are aligned to IGb14 (considered to be equivalent to ITRF2014 (International Terrestrial Reference System 2014)) at epoch 2005.0.

(ii) 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. WGS-84 (G2139) is consistent with ITRF 2014 and in practical realization the difference between these two systems is statistically insignificant for most applications, meaning WGS-84 (G2139) and ITRF 2014 are essentially identical.

(2) Vertical reference system

(a) Mean sea level (MSL)

(i) 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.

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

(c) Accuracy of AGM-96

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

(3) Temporal reference system

(a) Gregorian calendar and Coordinated Universal Time (UTC)

(i) A value in the time domain is a temporal position measured relative to a temporal reference system.

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

(iii) Guidance material relating to UTC is contained in Attachment D of Annex 5 — Units of Measurement to be Used in Air and Ground Operations.

(iv) 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.

(b) Different temporal reference system

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

AIS.015 Miscellaneous specifications

(1) English text in aeronautical information products

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

(2) Place names

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

(3) Units of measurement

Units of measurements used in the origination, processing and distribution of aeronautical data and aeronautical information should be consistent with the decision taken by the State in respect of the use of the tables contained in Annex 5.

(4) ICAO abbreviations

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

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SECTION A

TECHNICAL REQUIREMENTS

CHAPTER 1

Responsibilities and functions

AIS.020 AIS Responsibilities and functions

The AIS provider shall:

(1) Availability of aeronautical data and aeronautical information

Ensure that aeronautical data and aeronautical information necessary for the safety, regularity and efficiency of air navigation are made available in a form suitable for the operational requirements of the Air Traffic Management (ATM) community, including:

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

(b) the ATS unit responsible for flight information service and the services responsible for pre-flight information.

(2) Aeronautical data and aeronautical information

Receive, collate or assemble, edit, format, publish/store and distribute aeronautical data and aeronautical information concerning the entire territory of Mauritius as well as those areas over the high seas for which Mauritius is responsible for the provision of ATS. Aeronautical data and aeronautical information shall be provided as aeronautical information products.

(3) Availability of aeronautical information services

Ensure that 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 the AIS, plus a period of at least two hours before and after such a period. Service shall also be available at such other time as may be requested by an appropriate ground organization.

(4) Provision of flight information

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 AIS of other States; and

(b) from other sources that may be available.

(5) Authority of the originating State

Ensure that when aeronautical data and aeronautical information obtained under AIS.020 (4)(a) is distributed, be clearly identified as having the authority of the originating State.

(6) Verify information before distribution

If possible, ensure that aeronautical data and aeronautical information obtained under AIS.020 (4)(b), be verified before distribution and if not verified shall, when distributed, be clearly identified as such.

(7) Availability of required information by other States

Promptly make available to the AIS of other States any aeronautical data and aeronautical information necessary for the safety, regularity or efficiency of air navigation required by them, to enable them to comply with AIS.020 (1).

(8) Safety Management

Establish and implement a safety management process, this shall be in line and under the umbrella of the air traffic services safety management system.

GM AIS.020 AIS Responsibilities and functions

(1) A description of the ATM community is contained in the Global Air Traffic ManagementOperational Concept (Doc 9854).

(2) An AIS may include origination functions.

(4) One such source is the subject of a provision in AIS.115.

AIS.025 Exchange of aeronautical data and aeronautical information

(1) Designation of AIS provider

The AIS/DCA provider has being designated as the office to which all elements of aeronautical information products provided by other States shall be addressed. The AIS provider shall be qualified to deal with requests for aeronautical data and aeronautical information provided by other States.

(2) Establishment of formal arrangements

The AIS provider shall establish formal arrangements between those parties providing aeronautical data and aeronautical information and their users in relation to the provision of the service.

(3) International NOTAM office

The international NOTAM office designated in Mauritius, shall have the responsibility to cover all the Mauritian territory.

(4) Arrangement for the issuance and receipt of NOTAM

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

(5) Establishment of direct contact between AIS

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

(6) Availability of aeronautical information products

Except as provided in AIS.025(8), one copy of each of the following aeronautical information products that have been requested by the AIS of a Contracting State shall be made available by the AIS provider 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.

(7) Bilateral agreement for exchanging products

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

(8) Agreement for sharing digital data sets to be used by the AIS providers

When aeronautical data and aeronautical information are provided in the form of digital data sets to be used by the AIS provider, they shall be provided on the basis of agreement between the AIS providers concerned.

(9) Separate agreement between the participating States and entities

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.

(10) Provision of data sets

The AIS provider for the provision of data sets, shall use globally interoperable aeronautical data and aeronautical information exchange models.

GM AIS.025 Exchange of aeronautical data and aeronautical information

(2) Establishment of formal arrangements

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

(8) Agreement for sharing digital data sets to be used by the AIS providers

The intention is that States are able to access data for the purposes specified in AIS.020 (4).

(10) Provision of data sets

- Specifications concerning globally interoperable aeronautical data and aeronautical information exchange models are contained in the Procedures for Air Navigation Services — Aeronautical Information Management (PANS-AIM, Doc 10066).
- Guidance material on globally interoperable aeronautical data and aeronautical information exchange models is contained in Doc 8126.

AIS.030 Copyright

(1) Copyright protection

Any aeronautical information product which has been granted copyright protection by the originating State and provided to another State in accordance with AIS.025 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) When aeronautical data and aeronautical information are provided to a State in accordance with AIS.025 (8), the receiving State shall not provide the digital data sets of the providing State to any third party without the consent of the providing State.

GM AIS.030 Copyright

In order to protect the investment in the products of AIS as well as to ensure better control of their use, AIS may wish to apply copyright to those products in accordance with Mauritius national laws.

AIS.035 Cost recovery

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

GM AIS.035 Cost recovery

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

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CHAPTER 2

Aeronautical Information Management

AIS.040 Information management requirements

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

AIS.045 Data quality requirements

Data shall be collected and transmitted to the aeronautical information service (AIS) in accordance with the accuracy requirements and integrity classification specified in Doc. 10066, Appendix 1.

(1) Data accuracy

The AIS provider shall ensure that the order of accuracy for aeronautical data shall be in accordance with its intended use.

(a) Classification of positional data

Three types of positional data shall be identified:

(i) surveyed points

(1) runway thresholds,

(2) navigation aid positions, etc.,

(ii) calculated points

mathematical calculations from the known surveyed points of points in space/fixes, and

(iii) declared points

flight information region boundary points

(2) Data resolution

The AIS provider shall commensurate the order of resolution of aeronautical data with the actual data accuracy.

(3) Data integrity

(a) The AIS provider shall maintained the integrity of aeronautical data throughout the data chain from origination to distribution to the next intended user.

(b) The AIS provider shall ensure that based on the applicable integrity classification, procedures shall be put in place in order to:

(i) For routine data:

Avoid corruption throughout the processing of the data;

(ii) For essential data:

Ensure corruption does not occur at any stage of the data processing life cycle (e.g. collection, processing, storing, integration, exchange and delivery) and include additional measures or steps as needed to address potential risks in the

overall processing of aeronautical data to further ensure data integrity at this level; and

(iii) For critical data:

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

(4) Data traceability

The AIS provider shall ensure and retained the traceability of aeronautical data as long as the data is in use.

(5) Data timeliness

The AIS provider shall ensure that timeliness of aeronautical data be ensured by including limits on the effective period of the data elements.

(6) Data completeness

The AIS provider shall ensure that completeness of aeronautical data be ensured in order to support its intended use.

(7) Data format

The AIS provider shall ensure that the format of delivered aeronautical data be adequate to ensure that the data is interpreted in a manner that is consistent with its intended use.

GM AIS.045 Data quality requirements

(1) Data accuracy

Specifications concerning the order of accuracy (including confidence level) for aeronautical data are contained in the Procedures for Air Navigation Services — Aeronautical Information Management (PANS-AIM, Doc 10066), Appendix 1.

(2) Data resolution

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

(3) Data integrity

(a) Specifications concerning the integrity classification related to aeronautical data are contained in the PANS-AIM (Doc 10066), Appendix 1.

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

(5) Data timeliness

- These limits may be associated with individual data elements or data sets.
- If the effective period is defined for a data set, it will account for the effective dates of all of the individual data elements.

AIS.050 Aeronautical data and aeronautical information verification and validation

(1) Check aeronautical data before submitting to the AIS

The AIS provider shall ensure that aeronautical data and aeronautical information to be published as part of an aeronautical information product shall be checked before being submitted to the AIS in order to ensure that all necessary information has been included and that it is correct.

(2) Verification and validation procedures

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

AIS.055 Data error detection

(1) Digital data error detection techniques for transmission and/or storage

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

(2) Digital data error detection techniques to maintain integrity levels

Digital data error detection techniques shall be used by the AIS provider in order to maintain the integrity levels as specified in AIS.045 (3).

GM AIS.055 Data error detection

The technical means used for data error detection should be based on the use of systematic cycling codes. The means to implement systematic cycling codes include the use of hash functions and cyclic redundancy check (CRC).

More detailed specifications concerning digital data error detection techniques are contained in the PANS-AIM (Doc 10066).

AIS.060 Use of automation

(1) The AIS provider shall apply automation in order to ensure the quality, efficiency and cost-effectiveness of aeronautical information services.

(2) The AIS provider shall give due consideration to the integrity of data and information when automated processes are implemented, and mitigating steps taken where risks are identified.

(3) The AIS provider 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.

GM AIS.060 Use of automation

(1) Guidance material on the development of databases and the establishment of data exchange services is contained in Doc 8126.

(2) Risks of altering the integrity of data and information may be introduced by automated processes in cases of unexpected systems behaviours.

AIS.065 Quality management system

(1) QMS implementation

The AIS provider shall implement and maintain a Quality Management System (QMS) encompassing all functions of the AIS, as outlined in AIS.020. The execution of such quality management systems shall be made demonstrable for each function stage.

(2) Applying quality management

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

(3) ISO 9000 series

The quality management system established by the AIS provider in accordance with AIS.065 (1) shall follow the ISO 9000 series of quality assurance standards and be certified by an accredited certification body.

(4) Training and competencies of AIS staff

Within the context of the established quality management system, the AIS provider shall ensure that the following be established and implemented:

(a) Training programme and training plan

The AIS provider shall develop and implement a training programme and a training plan for its AIS staff, which shall be approved by the Authority and as a minimum shall include initial, OJT, specialized and recurrent training.

(b) OJT requirements

The AIS provider shall ensure that the AIS staff is required to complete in a satisfactorily manner OJT before duties and responsibilities are assigned.

(c) Supplementary training

The AIS provider shall provide supplementary training to AIS staff, to ensure that they are competent in the use of new or updated equipment, procedures, etc.

(d) Recurrent training

The AIS provider shall provide recurrent training to AIS staff as a minimum in the areas of AIM, Notam, Integrated documentation, etc. at least once every two years.

(e) Training records

The AIS provider shall develop a system or methodology for maintaining training records for its AIS staff, so that the qualifications of personnel can be confirmed.

(f) The competencies and the associated knowledge, skills and attitiudes required for each function shall be identified, and personnel assigned to perform those functions shall be appropriately trained.

(g) Processes shall be in place to ensure that personnel possess the competencies required to perform specific assigned functions.

(h) Initial and periodic assessments shall be established that require personnel to demonstrate the required competencies.

(i) Periodic assessments of personnel shall be used as a means to detect and correct shortfalls in knowledge, skills and attitudes.

(j) The training methodology to be established shall follow the competency-based training and assessment methodology.

(5) Policies, processes and procedures

The 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.

(6) Assurance and confidence for the users

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.

(7) Monitoring compliance with the QMS

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

(8) Auditing for demonstrating compliance of the QMS

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.

GM AIS.065 Quality management system

(1) QMS implementation

Guidance material is contained in the Manual on the Quality Management System for Aeronautical Information Services.

(4) Training and competencies of AIS staff

Provisions related to the competency-based training and assessment methodology are contained in the Procedures for Air Navigation Services — Training (PANS-TRG, Doc 9868) and in the Procedures for Air Navigation Services — Aeronautical Information Management (PANS-AIM, Doc 10066).

Additional guidance concerning a competency-based training and assessment methodology to ensure the competency of personnel in accordance with the Procedures for Air Navigation Services — Training (PANS-TRG, Doc 9868) is contained in the Manual on Aeronautical Information Services Training (Doc 9991).

AIS.070 Identification and delineation of prohibited, restricted and danger areas

Each prohibited area, restricted area, or danger area established by Mauritius shall, upon

initial establishment, be given an identification and full details shall be promulgated (see ENR 5.1 of Appendix 2 PANS AIM, Doc. 10066).

(1) Identification

The identification so assigned shall be used to identify the area in all subsequent notifications pertaining to that area.

(2) Composition of the identification

(a) The identification shall be composed of a group of letters and figures as follows:

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

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

(iii) a number, unduplicated within Mauritius concerned.

(3) Avoiding confusion

To avoid confusion, identification numbers shall not be reused for a period of at least one year after cancellation of the area to which they refer.

(4) Size of the areas

When a prohibited, restricted or danger area is established, the area should be as small as practicable and be contained within simple geometrical limits, so as to permit ease of reference by all concerned.

GM AIS.070 Identification and delineation of prohibited, restricted and danger areas

Nationality letters are those contained in Location Indicators (Doc 7910).

AIS.075 Human Factors considerations

(1) Human factors principles

The organization of the aeronautical information services; 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.

(2) Human interaction in the integrity of information

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

GM AIS.075 Human Factors considerations

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

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CHAPTER 3

Scope of Aeronautical Data and Aeronautical Information

AIS.080 Scope of aeronautical data and aeronautical information

(1) Sub-domains of aeronautical data and aeronautical information

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

(a) national regulations, rules and procedures;

(b) aerodromes and heliports;

(c) airspace;

(d) air traffic services (ATS) routes;

(e) instrument flight procedures;

(f) radio navigation aids/systems;

(g) obstacles;

(h) terrain; and

(i) geographic information.

(2) Determination and reporting of aeronautical data

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.

GM AIS. 080 Scope of aeronautical data and aeronautical information

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

(1) Sub-domains of aeronautical data and aeronautical information

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

(2) Determination and reporting of aeronautical data

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

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AIS.085 Metadata

(1) Metadata collection

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

(2) Application of metadata

Metadata collection shall be applied throughout the aeronautical information data chain, from origination to distribution to the next intended user.

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

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

(b) the function performed; and

(c) the date and time of operation.

GM AIS.085 Metadata

Detailed specifications concerning metadata are contained in the PANS-AIM (Doc 10066).

ISO Standard 19115 specifies requirements for geographic information metadata.

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CHAPTER 4

Aeronautical Information Products and Services

AIS.090 General

(1) Provision of aeronautical information

Aeronautical information shall be provided in the form of aeronautical information products and associated services.

(2) Provision of aeronautical information in multiple formats

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

GM AIS.090 General

Specifications concerning the order of resolution of aeronautical data provided for each aeronautical information product are contained in the Procedures for Air Navigation Services — Aeronautical Information Management (PANS-AIM, Doc 10066), Appendix 1.

AIS.095 Aeronautical information in a standardized presentation

(1) Standardized presentation of aeronautical information

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

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

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

(2) Aeronautical Information Publication (AIP)

The AIP shall contain concise, current information relating to, and arranged under, the subject headings listed in PANS AIM. This facilitates both the locating of information under a specific heading and the storage/retrieval of the information using automated processing. The AIS provider shall comply with the contents of the AIP established in Appendix 2 of PANS AIM (Doc. 10066) “Contents of the Aeronautical Information Publication (AIP)”.

The AIP shall include:

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

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

(c) A list of significant differences between the national regulations and practices of the State 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 Mauritius in each significant case where an alternative course of action is provided for ICAO Standards, Recommended Practices and Procedures.

(e) General specifications of the AIP

(i) The issuing State and publishing authority shall be clearly indicated.

(ii) The AIP shall be self-contained and shall include a table of contents.

(iii) The AIP shall not duplicate information within itself or from other sources.

(iv) The AIP shall be published in loose-leaf form unless the complete publication is reissued at frequent intervals.

(v) The AIP shall be organized in three parts (GEN, ENR and AD), sections and subsections, except when the AIP, or a volume of the AIP, is designed to facilitate operational use in flight, in which case the precise format and arrangement may be left to the discretion of the AIS provider that an adequate table of contents is included.

(vi) The AIP shall be dated. In the case of Aeronautical Information Publications issued in loose-leaf form, each page shall be dated. The date, consisting of the day, month (by name) and year, shall be the publication date or the effective date (AIRAC) of the information.

(vii) Charts, maps or diagrams shall be used to complement or as a substitute for the tabulations or text of AIP. Shall be complied according to chapter 5 of PANS AIM (Doc. 10066).

(viii) A checklist giving the current date of each page in the Aeronautical Information Publication series shall be reissued frequently to assist the user in maintaining a current publication. The page number/chart title and date of the checklist shall appear on the checklist itself.

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

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

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

(1) the latitude shall be given first;

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

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

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

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

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

(xiii) The units of measurement selected for use in the AIP, e.g. dimensions on aerodromes, distances, elevations or altitudes, shall be consistently followed and shall adhere to Annex 5 — Units of Measurement to be Used in Air and Ground Operations.

(xiv) Index maps and diagrams included in the AIP shall comply with the specifications established in PANS AIM (Doc. 10066), Chapter 5, 5.2.1.2.13.

(3) AIP Amendments

(a) Permanent changes to the AIP shall be published as AIP Amendments.

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

(c) When a regular interval or publication dates for the AIP Amendments has been established, these intervals or publication dates shall be included in the AIP, Part 1 — General (GEN).

(d) New or revised information contained in the AIP shall be identified.

(e) Each AIP Amendment shall be allocated a serial number, which shall be consecutive.

(f) Each AIP Amendment shall contain a publication date.

(g) Each AIRAC AIP Amendment shall contain an effective date.

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

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

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

(k) Each amendment shall include a checklist giving the current date of each loose-leaf page in the AIP, and shall provide a recapitulation of any outstanding manuscript corrections. The checklist shall carry both the page number and date.

(4) AIP Supplement

(a) 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.

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

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

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

(e) A checklist of valid AIP Supplements shall be issued at intervals of not more than one month as part of the checklist of NOTAM required by 5.2.5.3 of PANS AIM (Doc. 10066) and with distribution as for the AIP Supplements.

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

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

(5) Aeronautical Information Circulars

(a) The AIS provider shall use an AIC to provide the following:

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

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

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

(b) This shall include:

(i) forecasts of implementation of new navigation systems;

(ii) significant information arising from aircraft accident/incident investigation which has a bearing on flight safety;

(iii) information on regulations relating to the safeguarding of international civil aviation against acts of unlawful interference;

(iv) advice on medical matters of special interest to pilots;

(v) warnings to pilots concerning the avoidance of physical hazards;

(vi) effect of certain weather phenomena on aircraft operations;

(vii) information on new hazards affecting aircraft handling techniques;

(viii) regulations relating to the carriage of restricted articles by air;

(ix) reference to the requirements of, and publication of changes in, national legislation;

(x) flight crew licensing arrangements;

(xi) training of aviation personnel;

(xii) application of, or exemption from, requirements in national legislation;

(xiii) advice on the use and maintenance of specific types of equipment;

(xiv) actual or planned availability of new or revised editions of aeronautical charts;

(xv) carriage of communication equipment;

(xvi) explanatory information relating to noise abatement;

(xvii) airworthiness directives;

(xviii) changes in NOTAM series or distribution, new editions of AIP or major changes in their contents, coverage or format;

(xix) other information of a similar nature.

(c) The AIS provider shall select the AIC that are to be given international distribution.

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

(e) Distribution of AIC on a national basis is left to the discretion of the AIS provider.

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

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

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

(i) A checklist of AIC provided internationally shall be included in the NOTAM checklist.

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

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

(6) Aeronautical charts

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

(i) Aerodrome/Heliport Chart — ICAO;

(ii) Aerodrome Ground Movement Chart — ICAO;

(iii) Aerodrome Obstacle Chart — ICAO Type A;

(iv) Aerodrome Obstacle Chart — ICAO Type B (when available);

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

(vi) Aircraft Parking/Docking Chart — ICAO;

(vii) Area Chart — ICAO;

(viii) ATC Surveillance Minimum Altitude Chart — ICAO;

(ix) Instrument Approach Chart — ICAO;

(x) Precision Approach Terrain Chart — ICAO;

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

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

(xiii) Visual Approach Chart — ICAO.

(b) Enroute Chart

The En-route Chart — ICAO shall, when available, form part of the AIP, or be provided separately to recipients of the AIP.

(c) Aeronautical charts as information products

The aeronautical charts listed below shall, when available, be provided as aeronautical information products:

(i) World Aeronautical Chart — ICAO 1:1 000 000;

(ii) Aeronautical Chart — ICAO 1:500 000;

(iii) Aeronautical Navigation Chart — ICAO Small Scale; and

(iv) Plotting Chart — ICAO chart.

(d) Electronic aeronautical charts

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

(e) Chart resolution of aeronautical data

The chart resolution of aeronautical data shall be that as specified for a particular chart, as contained in Appendix 1 of PANS AIM (Doc. 10066)

(7) NOTAM

(a) Origination

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.

(b) General specifications

(i) Except as otherwise provided below in (iv) and (v), each NOTAM shall contain the information in the order shown in the NOTAM Format in Appendix 3 of PANS AIM (Doc. 10066).

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

(iii) All NOTAM shall be issued in the English language.

(iv) information concerning standing water on the movement area shall be disseminated by means of a SNOWTAM, and shall contain the information in the order shown in the SNOWTAM Format in Appendix 4 of PANS AIM (Doc. 10066) as of 5 November 2020.

(v) Information concerning an operationally significant change in volcanic activity, volcanic eruption and/or volcanic ash cloud shall, when reported by means of an ASHTAM, contain the information in the order shown in the ASHTAM Format in Appendix 5 of PANS AIM (Doc. 10066).

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

(vii) When a NOTAM is issued which cancels or replaces a previous NOTAM, the series and number of the previous NOTAM shall be indicated.

(1) The series, location indicator and subject of both NOTAM shall be the same.

(viii) Only one NOTAM shall be cancelled or replaced by a NOTAM.

(ix) Each NOTAM shall deal with only one subject and one condition of the subject.

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

(xi) Each NOTAM shall be transmitted as a single telecommunication message.

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

(xiii) Location indicators included in the text of a NOTAM shall be those contained in Location Indicators (Doc 7910).

(1) In no case shall a curtailed form of such indicators be used.

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

(c) NOTAM number and series allocation

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

(ii) Letters S and T shall not be used to identify a NOTAM series.

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

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

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

(d) NOTAM checklist

(i) A checklist of valid NOTAM shall be issued as a NOTAM checklist at intervals of not more than one month.

(ii) One NOTAM checklist shall be issued for each series.

(iii) A NOTAM checklist shall refer to the latest AIP Amendments, AIP Supplements, data sets and at least the internationally distributed AIC, and, when it is selected, include the checklist of AIP Supplements.

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

GM AIS.095 Aeronautical information in a standardized presentation

(1) Standardized presentation of aeronautical information

Detailed specifications about AIP, AIP Amendments, AIP Supplements, AIC and NOTAM are contained in the PANS-AIM (Doc 10066).

Cases where digital data sets may replace the corresponding elements of the standardized presentation are detailed in the PANS-AIM (Doc 10066).

(2) Aeronautical Information Publication (AIP)

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

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

The content of the Aeronautical Information Publication (AIP) is in Appendix 2 of PANS AIM (Doc. 10066).

(4) AIP Supplement

Since the AIP is subject to frequent change, provisions exist for its continual updating. In addition, changes of a temporary nature affecting the contents of an AIP are often required to cater for unexpected circumstances or, in some cases, planned modifications to a service/facility.

(5) Aeronautical Information Circulars

Since AIC information is often effective for long periods and requires little amendment, it will usually be found that AIC can, if necessary, remain outstanding for several years without inconvenience. A review and re-issue on a yearly basis is however advisable.

(6) Aeronautical charts

Annex 4 — Aeronautical Charts provides Standards and Recommended Practices including provision requirements for each chart type.

Specifications concerning the chart resolution for aeronautical data are contained in the PANS-AIM (Doc 10066), Appendix 1.

(7) NOTAM

Detailed specifications for NOTAM, including formats for SNOWTAM and ASHTAM, are contained in the PANS-AIM (Doc 10066).

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

(b) General specifications

(i) Detailed guidance material covering NOTAM, SNOWTAM, ASHTAM and pre-flight information bulletin (PIB) production is contained in Doc 8126.

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

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

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

(ix) Guidance material concerning the combination of a subject and a condition of the subject in accordance with the NOTAM Selection Criteria is contained in Doc 8126.

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AIS.100 Digital Data Sets

(1) General provisions

(a) The AIS provider to facilitate and support the use of exchange of digital data sets between data providers and data users, shall use the ISO 19100 series of standards for geographic information as a reference framework.

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

(c) The content and structure of digital data sets shall be defined in terms of an applicationschema and a feature catalogue.

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

(i) AIP data set;

(ii) terrain data sets;

(iii) obstacle data sets;

(iv) aerodrome mapping data sets; and

(v) instrument flight procedure data sets.

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

(f) The AIS provider shall regularly provide a checklist of valid data sets.

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

(h) The aeronautical information model used shall:

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

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

(iii) include provisions for metadata as specified in AIS.085 and AIS.100 (2); and

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

(i) The aeronautical data exchange model used shall:

(i) apply a commonly used data encoding format;

(ii) cover all the classes, attributes, data types and associations of the aeronautical information model detailed in AIS.100 (1)(h); and

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

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

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(2) Metadata

Each data set shall include the following minimum set of metadata:

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

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

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

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

(3) AIP data sets

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

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

(c) 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.

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

(i) air traffic services (ATS) airspace (type, name, lateral limits, vertical limits, class of airspace);

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

(iii) ATS route and other route (designator, flight rules);

(iv) route segment (navigation specification, from point, to point, track, length, upper limit, lower limit, minimum en-route altitude (MEA), minimum obstacle clearance altitude (MOCA), direction of cruising level, required navigation performance);

(v) waypoint – en-route (identification, location, formation);

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

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

(viii) runway direction (designator, true bearing, threshold, take off run available (TORA), take-off distance available (TODA), accelerate-stop distance available (ASDA), landing distance available (LDA));

(ix) final approach and take-off (FATO) (designation, length, width, threshold point);

(x) touchdown and left-off (TLOF) (designator, centre point, length, width, surfacetype);

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

(e) When a property is not defined for a particular occurrence of the subjects listed in AIS.100 (3)(d), the AIP data subset shall include an explicit “not applicable” indication.

(4) Terrain and obstacle data sets

(a) The coverage areas for terrain and obstacle data sets shall be specified as follows:

(i) Area 1: the entire territory of a State;

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

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

(2) 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;

(3) 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

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

(iii) Area 3: the area bordering an aerodrome movement area that extends horizontally from the edge of a runway to 90 m from the runway centre line and 50 m from the edge of all other parts of the aerodrome movement area; and

(iv) Area 4: the area extending 900 m prior to the runway threshold and 60 m each side of the extended runway centre line in the direction of the approach on a precision approach runway, Category II or III.

(b) Where the terrain at a distance greater than 900 m (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.

(c) Terrain data sets

(i) 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 (See PANS AIM Doc. 10066 (5.3.3.2.1)).

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

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

(1) Area 2a;

(2) the take-off flight path area; and

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

(iv) For aerodromes regularly used by international civil aviation, additional terrain data shall be provided within Area 2 as follows:

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

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

(v) Arrangements shall be made for coordinating the provision of terrain data for adjacent aerodromes where their respective coverage areas overlap to assure that the data for the same terrain is correct.

(vi) For those aerodromes located near territorial boundaries, arrangements shall be made among States concerned to share terrain data.

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

(viii) For aerodromes regularly used by international civil aviation, terrain data shall be provided for Area 4 for all runways where precision approach Category II or III operations have been established and where detailed terrain information is required by operators to enable them to assess the effect of terrain on decision height determination by use of radio altimeters.

(ix) Where additional terrain data is collected to meet other aeronautical requirements, the terrain data sets shall be expanded to include this additional data.

(d) Obstacle data sets

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

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

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

(iv) 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.

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

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

(2) objects in the take-off flight path area which project above a plane surface having a 1.2 per cent slope and having a common origin with the take-off flight path area; and

(3) penetrations of the aerodrome obstacle limitation surfaces.

(vi) 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:

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

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

(3) Area 2d: an area outside Areas 2a, 2b and 2c up to a distance of 45 km from the aerodrome reference point, or to an existing TMA boundary, whichever is nearest. The Area 2d obstacle collection surface has a height of 100 m above ground;

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

(vii) Arrangements shall be made for coordinating the provision of obstacle data for adjacent aerodromes where their respective coverage areas overlap to assure that the data for the same obstacle is correct.

(viii) For those aerodromes located near territorial boundaries, arrangements shall be made among States concerned to share obstacle data.

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

(x) 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.

(xi) Where additional obstacle data is collected to meet other aeronautical requirements, the obstacle data sets shall be expanded to include this additional data.

(e) Aerodrome mapping data sets

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

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

(f) Instrument flight procedure data sets

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

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

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

(1) procedure (all properties);

(2) procedure segment (all properties);

(3) final approach segment (all properties);

(4) procedure fix (all properties);

(5) procedure holding (all properties); and

(6) helicopter procedure (all properties).

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

GM AIS.100 Digital Data Sets

(1) General

(a) Guidance material concerning the use of the ISO 19100 series of standards is contained in Doc 8126.

(b) ISO Standard 19131 outlines the specifications for geographic data products. This may include an overview, specification scope, data product identification, data content and structure, reference system, data quality, data capture, data maintenance, data portrayal, data product delivery, additional information and metadata.

(c) ISO Standard 19109 contains rules for application schema while ISO Standard 19110 describes the feature cataloguing methodology for geographic information.

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

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

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

(2) Metadata

GM 1. Detailed specifications concerning metadata are contained in the PANS-AIM (Doc 10066).

GM 2. ISO Standard 19115 specifies requirements for geographic information metadata.

(3) AIP Data sets

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

(d) GM 1. The description of the data subjects, together with their properties, data type and applicable data quality requirements, is provided in Appendix 1.

GM 2. The AIP data set includes relevant AIP Amendments and AIP Supplements.

(4) Terrain and obstacle data sets

GM 1. The numerical requirements for terrain and obstacle data sets are contained in the PANS AIM (Doc 10066), Appendices 1 and 8.

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

(a) (ii)(*1)* See Annex 14, Volume I, Chapter 3, for dimensions for runway strips.

Terrain and obstacle data is intended to be used in the following air navigation applications:

- ground proximity warning system with forward looking terrain avoidance function and minimum safe altitude warning (MSAW) system;
- determination of contingency procedures for use in the event of an emergency during a missed approach or take-off;
- aircraft operating limitations analysis;
- instrument procedure design (including circling procedure);
- determination of en-route “drift-down” procedure and en-route emergency landing location;
- advanced surface movement guidance and control system (A-SMGCS); and
- aeronautical chart production and on-board databases.

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

(a)(iv) 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 6, Table A6-2. Guidance on appropriate obstacles for this chart is given in the Aeronautical Chart Manual (Doc 8697).

(5) Obstacle data sets

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.

(6) Aerodrome mapping data sets

GM 1. 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.

GM 2. Aerodrome mapping data includes 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:

- position and route awareness including moving maps with own ship position, surface guidance and navigation (e.g. A-SMGCS);
- traffic awareness including surveillance and runway incursion detection and alerting;
- facilitation of aerodrome-related aeronautical information, including NOTAM;
- resource and aerodrome facility management; and
- aeronautical chart production.

The data may also be used in other applications such as training/flight simulator and synthetic vision systems.

GM 3. Aerodrome mapping data is organized and arranged in aerodrome mapping databases (AMDBs) for ease of electronic storage and usage by appropriate applications.

GM 4. The content of the aerodrome mapping data sets is defined in Radio Technical Commission for Aeronautics (RTCA) Document DO 272D/European Organization for Civil Aviation Equipment (EUROCAE) Document ED 99 — User Requirements for Aerodrome Mapping Information.

GM 5. Metadata elements applicable to aerodrome mapping data are contained in RTCA DO-291B/EUROCAE ED-119B — Interchange Standards for Terrain, Obstacle, and Aerodrome Mapping Data.

(f) Instrument flight procedure data sets

GM 1. The purpose of the instrument flight procedure data set is to support the transition of the ATM domain towards the use of digital data sets instead of paper products. Therefore, its scope is defined considering the likelihood that the data contained in this set is being used in digital format by service providers, ATC and IFR/VFR airspace users.

GM 2. The description of the data subjects, together with their properties, data type and applicable data quality requirements, is provided in Appendix 1.

AIS.105 Distribution services

(1) General

(a) Aeronautical information products shall be distributed to authorized users who request them.

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

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

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

(e) The checklist of the data sets shall be made available through the same distribution mechanism as is used for the data sets.

(2) NOTAM distribution

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

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

(c) The aeronautical fixed service (AFS) shall, whenever practicable, be employed for NOTAM distribution.

(d) 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 originating State shall select the NOTAM that are to be given international distribution.

(e) 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.

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

(g) Selective distribution lists should be used when practicable.

(3) Data set information services

(a) When provided, the digital data sets specified in AIS.100 should be made available through information services.

(i) A data set information service shall provide, as a minimum, the ability to query and retrieve as a whole each of the digital data sets specified in AIS.100.

(ii) A data set information service should provide the ability to query and retrieve selected elements of the digital data sets specified in AIS.100.

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

GM AIS.105 Distribution services

(1) General

GM 1. Distribution to the next intended user will differ in the delivery method applied which may either be:

(iv) Physical distribution. The means by which aeronautical data and aeronautical information distribution is achieved through the delivery of a physical package (e.g. postal services); or

(v) Direct electronic distribution. The means by which aeronautical data and aeronautical information distribution is achieved automatically through the use of a direct electronic connection between the AIS and the next intended user.

GM 2. Further guidance on digital data set distribution can be found in the Manual on System-wide Information Management (SWIM) Concept (Doc 10039).

(2) NOTAM distribution

GM 1. Guidance material relating to selective distribution lists is contained in the Aeronautical Information Services Manual (Doc 8126).

GM 2. Arrangements may be made for direct exchange of SNOWTAM (see Appendix 4 of Doc. 10066) between aerodromes/heliports.

(3) Data set information services

GM 1. In the context of system-wide information management, the notion of information service addresses machine-to-machine interaction in a service-oriented architecture.

GM 2. Procedures on information services are contained in the Procedures for Air Navigation Services —— Information Management (PANS-IM, Doc 10199).

GM 3. Guidance material on information services can be found in the Manual on System-wide Information Management Implementation (Doc 10203).

GM 4. Guidance material on how to query digital data sets is contained in the Aeronautical Information Services Manual (Doc 8126), Part IV.

AIS.110 Pre-flight information services

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

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

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

(4) Although NOTAM with purpose “M” are regarded not subject for a briefing but available on request, all NOTAM shall be provided for briefing by default and that content reduction should be at user’s discretion.

GM AIS.110 Pre-flight information services

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

(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 Doc 8126.

AIS.115 Post-flight information services

(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 flight crews.

(2) The arrangements specified in AIS.115 (1) shall ensure that such information is made available to the aeronautical information service (AIS) for distribution as the circumstances necessitate.

(3) For any aerodrome/heliport used for international air operations, arrangements shall be made to receive information concerning the presence of wildlife hazards observed by flight crews.

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

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CHAPTER 5

Aeronautical Information Updates

AIS.120 General specifications

The AIS provider shall ensure that aeronautical data and aeronautical information be kept up to date.

AIS.125 Aeronautical Information Regulation and Control (AIRAC)

(1) The AIS provider shall ensure that information concerning the following circumstances 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:

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

(i) flight information regions;

(ii) control areas;

(iii) control zones;

(iv) advisory areas;

(v) air traffic services (ATS) routes;

(vi) permanent danger, prohibited and restricted areas (including type and periods of activity when known) and air defence identification zones (ADIZ);

(vii) permanent areas or routes or portions thereof where the possibility of interception exists;

(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; and

(j) aerodrome operating minima if published by a State.

(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.

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

(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.

(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) The regulated system (AIRAC) shall 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; and

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

(7) Whenever major changes are planned and where advance notice is desirable and practicable, information should be made available by the AIS provider 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 instrument flight rules (IFR) operations;

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

(c) design and structure of the ATS 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 AIS.125 (1) if the entire State or any significant portion thereof is affected or if cross-border coordination is required.

GM AIS.125 Aeronautical Information Regulation and Control (AIRAC)

(5) AIRAC information 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.

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

AIS.130 Aeronautical information product updates

(1) AIP updates

(a) The aeronautical information publication (AIP) shall be amended or reissued at such regular intervals as may be necessary to keep it up to date.

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

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

(2) NOTAM

(a) When an AIP Amendment or an AIP Supplement is published in accordance with AIRAC procedures, a Trigger NOTAM shall be originated.

(b) 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.

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

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

(ii) establishment, withdrawal or significant changes in operation of aeronautical services (aerodromes, AIS, ATS, communications, navigation and surveillance (CNS), meteorology (MET), search and rescue (SAR), etc.);

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

(xviii) 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;

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

(xx) changes in aerodrome/heliport rescue and firefighting category provided (see Annex 14, Volume I, Chapter 9, and Attachment A, Section 17);

(xxi) 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;

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

(xxiii) 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;

(xxiv) 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;

(xxv) 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;

(xxvi) 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

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

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

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

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

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

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

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

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

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

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

(ix) training activities by ground units;

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

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

(xii) national regulations not affecting general aviation;

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

(xiv) general reminders on already published information;

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

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

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

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

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

(3) Data set updates

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

(b) 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 subset that includes only the differences from the previously issued complete data set.

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

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

(e) Updates to AIP and digital data sets shall be synchronized.

GM AIS.130 Aeronautical information product updates

(2)(a) Detailed specifications concerning the Trigger NOTAM are contained in the Procedures for Air Navigation Services — Aeronautical Information Management (PANS-AIM, Doc 10066).

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

(xvii) See Annex 11, 2.31 and Attachment C to that Annex.

Specifications concerning the timely promulgation of information by NOTAM are contained in Chapter 6 of the Procedures for Air Navigation Services — Aeronautical Information Management (PANS-AIM, Doc 10066).

(d) 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 crews.

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