



International Civil Aviation Organization

MIDANPIRG AIM Sub-Group

Third Meeting (AIM SG/3)
(Cairo, Egypt, 15 - 18 May 2017)

Agenda Item 3: Global/Regional Developments related to AIM and SWIM

AMENDMENTS AND PFA TO ANNEX 4, ANNEX 15 AND THE PANS AIM

(Presented by the Secretariat)

SUMMARY

This working paper presents the Proposal for Amendment (PfA) to the restructured amendment to Annex 15 and the new PANS AIM; amendment 39 to Annex 15 and amendment 59 to Annex 4.

Action by the meeting is at paragraph 3.

REFERENCES

- State Letter Ref.: AN2/2.1.1-17/22 dated 21 April 2017
- State Letter Ref.: AN2/2.4-16/18 dated 1 April 2016
- State Letter Ref.: AN9/1.3-16/38 dated 11 April 2016

1. INTRODUCTION

1.1 The meeting may wish to recall that Aeronautical Information Service (AIS) to Aeronautical Information Management (AIM) Study Group (AIS-AIMSG) set a strategy to restructure Annex 15 to include only requirements and performance specifications related to AIS/AIM in 6 new Chapters. First part of Annex 15 restructuring (Chapters 1 to 3) was published through amendment 37 to Annex 15 (applicable date 14 November 2013):

- Chapter 1 General.
- Chapter 2 Responsibilities and Functions.
- Chapter 3 Aeronautical Information Management.
- Chapter 4: Aeronautical data and information scope and collection.
- Chapter 5: Temporality and Distribution
- Chapter 6: Information Services

1.2 PANS AIM has also been developed to include procedures, processes, formats and technical specifications. An AIM data Catalogue is developed to be included in PANS AIM Appendix 1. The data Catalogue is considered as a reference for all provisions related to aeronautical data origination and publication. The Data Catalogue provides a common language that can be used by data providers/originators and AIS. Data Catalogue would also facilitate formal arrangements between AIS/AIM units with data originators.

1.3 The Data Catalogue consolidates data that may be collected and maintained by AIS and is the source of the accuracy and integrity requirements for determination and reporting of aeronautical data to AIS. It is also the source of the resolution and integrity requirements for publication and charting of products including aeronautical data included in Annex 15. Information sub-domains of the Data Catalogue are as follows:

- a) Aerodromes
- b) Airspaces
- c) ATS Routes
- d) Instrument Flight Procedures
- e) Navigation Aids / Systems
- f) Obstacles
- g) Geographic Information

2. DISCUSSION

PfA to the restructured Annex 15 and the new PANS AIM

2.1 The meeting may wish to recall that the Air Navigation Commission (ANC), at the sixth meeting of its 203rd Session held on 1 December 2016, conducted a preliminary review of the proposals developed by the AIS-AIMSG for the amendment of Annex 15 — Aeronautical Information Services, the new Procedures for Air Navigation Services — Aeronautical Information Management (PANS-AIM) and consequential amendments to Annex 3, Annex 4, Annex 6 Part I, Annex 9, Annex 10 Volume I and Volume II, Annex 11, Annex 14 Volume I and Volume II, Doc 4444 (PANS ATM), Doc 8168 (PANS OPS) Volume I and II, Doc 8400 (PANS ABC) and Doc 9981 (PANS Aerodrome). The Commission authorized the transmission of the proposals to Contracting States and appropriate international organizations for comments.

2.2 The meeting may wish to note that the proposed amendment to Annex 15, new PANS-AIM and consequential amendments to the above mentioned ICAO Annexes and Documents were issued on 21 April 2017 (SL Ref.: AN2/2.1.1-17/22,) as at **Appendix A**, with consultation deadline **21 July 2017** and envisaged applicability date **3 November 2018**. Consolidated clean versions of the draft Annex 15 and the PANS AIM (English versions only) are at **Appendices B** and **C**, for information only.

Amendment 39 to Annex 15

2.3 The meeting may wish to note that the adoption of amendment 39 to Annex 15 was issued on 1 April 2016 (Ref.: AN 2/2.4-16/18) with the effective date of 11 July 2016, as at **Appendix D**. The amendment is published into two parts:

- a) Amendment 39 A (Applicability date 10 November 2016):
 - recommendations of the third meeting of the Aerodrome Panel (AP/3) relating to the publication of information on runway end safety area (RESA) and arresting system in the aeronautical information publication (AIP);
 - recommendations of the twelfth meeting of the Instrument Flight Procedures Panel (IFPP/12) relating to en-route airway directional use restrictions; and
 - recommendations of the second meeting of the Operational Data Link Panel (OPLINKP/2) relating to performance-based communication and surveillance (PBCS) and satellite voice communications (SATVOICE).

b) Amendment 39 B (Applicability date 5 November 2020):

- recommendations of the Friction Task Force of the Aerodrome Design and Operations Panel (ADOP) relating to the use of a global reporting format for assessing and reporting runway surface conditions.

2.4 It should be noted that the time between the effective date and the applicability date of the Amendment 39 B is longer than usual due to the nature and complexity of the proposal.

Amendment 59 to Annex 4

2.5 The meeting may wish to note that the adoption of amendment 59 to Annex 4 was issued on 11 April 2016 (Ref.: AN 9/1.3-16/38) with the effective date of 11 July 2016 and applicability date of 10 November 2016, as at **Appendix E**, arising from the second meeting of the Operational Data Link Panel (OPLINKP/2); and the twelfth meeting of the Instrument Flight Procedures Panel (IFPP/12) concerning satellite voice communications (SATVOICE); visual segment surface (VSS) penetrations charting requirements; and update of the provisions relating to publication depiction and functionality requirements of fly-by and fly-over significant points, area minimum altitude (AMA), CAT H procedures and en-route airway directional use restrictions.

3. ACTION BY THE MEETING

3.1 The meeting is invited to urge States to:

- a) review the PfA to the restructured Annex 15 and the new PANS AIM at **Appendix A**; and provide comments no later than **21 July 2017**; and
- b) take necessary actions for the implementation of amendments to Annexes 4 and 15, and in particular amendment 39B to Annex 15 related to the use of a global reporting format for assessing and reporting runway surface conditions and the new SNOWTAM format.



AIM SG/3-WP/3 APPENDIX A

International
Civil Aviation
Organization

Organisation
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Organización
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Internacional

Международная
организация
гражданской
авиации

منظمة الطيران
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Ref.: AN 2/2.1.1-17/22

21 April 2017

Subject: Proposed amendment to Annex 15, new PANS-AIM and consequential amendments to Annexes 3, 4, 6, 9, 10, 11 and 14, PANS-ATM, PANS-OPS, PANS-ABC and PANS-Aerodromes

Action required: Comments to reach Montréal by 21 July 2017

Sir/Madam,

1. I have the honour to inform you that the Air Navigation Commission, at the sixth meeting of its 203rd Session held on 1 December 2016, conducted a preliminary review of the proposals developed by the Aeronautical Information Service (AIS) to Aeronautical Information Management (AIM) Study Group (AIS-AIMSG) for the amendment of Annex 15 — *Aeronautical Information Services*, the new *Procedures for Air Navigation Services — Aeronautical Information Management* (PANS-AIM) and consequential amendments to Annex 3 — *Meteorological Service for International Air Navigation*, Annex 4 — *Aeronautical Charts*, Annex 6 — *Operation of Aircraft*, Part I — *International Commercial Air Transport — Aeroplanes*, Annex 9 — *Facilitation*, Annex 10 — *Aeronautical Telecommunications*, Volume I — *Radio Navigation Aids* and Volume II — *Communication Procedures including those with PANS status*, Annex 11 — *Air Traffic Services*, Annex 14 — *Aerodromes*, Volume I — *Aerodrome Design and Operations* and Volume II — *Heliports, Procedures for Air Navigation Services — Air Traffic Management* (PANS-ATM, Doc 4444), *Procedures for Air Navigation Services — Aircraft Operations*, Volume I — *Flight Procedures* and Volume II — *Construction of Visual and Instrument Flight Procedures* (PANS-OPS, Doc 8168), *Procedures for Air Navigation Services — ICAO Abbreviations and Codes* (PANS-ABC, Doc 8400) and *Procedures for Air Navigation Services — Aerodromes* (PANS-Aerodromes, Doc 9981). The Commission authorized the transmission of the proposals to Contracting States and appropriate international organizations for comments.

2. The background of the aforementioned proposals for the amendment is explained in Attachment A. The proposals for amendment of Annex 15, the new PANS-AIM and the consequential amendments to multiple Annexes and PANS are presented by subject in Attachments B to V. To facilitate your review of the proposed amendments, the rationales for the amendments have been provided in a text box immediately following each proposal. The aeronautical data catalogue, which forms part of

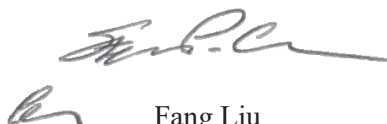
Appendix 1 to the PANS-AIM (Attachment G refers), is available on the ICAO-NET. The consolidated clean versions of the proposed Annex 15 and the new PANS-AIM, provided for your information only in English, are also found on the ICAO-NET.

3. May I request that any comments you wish to make on the amendment proposal be dispatched to reach me not later than 21 July 2017. To facilitate the processing of replies with substantive comments, I invite you to submit an electronic version in Word format to icaohq@icao.int. The Air Navigation Commission has asked me to specifically indicate that comments received after the due date may not be considered by the Commission and the Council. In this connection, should you anticipate a delay in the transmission of your reply, please let me know in advance of the due date.

4. For your information, the proposed amendment of Annex 15, the new PANS-AIM and the consequential amendments to Annexes 3, 4, 6 Part I, 9, 10 Volumes I and II, 11, 14 Volumes I and II, and the PANS-ATM, PANS-OPS Volumes I and II, and PANS-ABC are envisaged for applicability on 8 November 2018. The proposed amendment to the SNOWTAM format and associated examples in the PANS-AIM and the consequential amendment to the PANS-Aerodromes are envisaged for applicability on 5 November 2020. Any comments you may have thereon would be appreciated.

5. The subsequent work of the Air Navigation Commission and the Council would be greatly facilitated by specific statements on the acceptability or otherwise of the amendment proposals. Please note that for the review of your comments by the Air Navigation Commission and the Council, replies are normally classified as “agreement with or without comments”, “disagreement with or without comments” or “no indication of position”. If in your reply the expressions “no objections” or “no comments” are used, they will be taken to mean “agreement without comment” and “no indication of position”, respectively. In order to facilitate proper classification of your response, a form has been included in Attachment W which may be completed and returned together with your comments, if any, on the technical content of the proposals in Attachments B to V. Should you have comments on the wording of the amendment proposals in one of the languages other than English, you are invited to provide these in Attachment X. This will facilitate coordination with ICAO Languages and Publications.

6. Accept, Sir/Madam, the assurances of my highest consideration.


Fang Liu
Secretary General

Enclosures:

- A — Background information
- B — Proposed amendment to Annex 15 – Table of Contents and mapping of relocated text
- C — Proposed amendment to Annex 15 – Indication of text relocation
- D — Proposed amendment to Annex 15
- E — Proposed new PANS-AIM – Table of Contents
- F — Proposed new PANS-AIM – Indication of text relocation
- G — Proposed amendment to content relocated to PANS-AIM

- H — Proposed amendment to PANS-AIM
(5 November 2020 applicability)
- I — Proposed amendment to Annex 3
- J — Proposed amendment to Annex 4
- K — Proposed amendment to Annex 6, Part I
- L — Proposed amendment to Annex 9
- M — Proposed amendment to Annex 10, Volume I
- N — Proposed amendment to Annex 10, Volume II
- O — Proposed amendment to Annex 11
- P — Proposed amendment to Annex 14, Volume I
- Q — Proposed amendment to Annex 14, Volume II
- R — Proposed amendment to PANS-ATM (Doc 4444)
- S — Proposed amendment to PANS-OPS, Volume I
(Doc 8168)
- T — Proposed amendment to PANS-OPS, Volume II
(Doc 8168)
- U — Proposed amendment to PANS-ABC (Doc 8400)
- V — Proposed amendment to PANS-Aerodromes
(Doc 9981)
- W — Response form
- X — Response form for comments on wording

BACKGROUND INFORMATION

1. INTRODUCTION

1.1 The proposed amendment contains the result of the review and restructure of Annex 15 — *Aeronautical Information Services* to incorporate aeronautical information management (AIM) concepts in the provisions and to facilitate the transition from product-centric aeronautical information service (AIS) to data-centric AIM environments. The review also identified the need to create the new *Procedures for Air Navigation Services — Aeronautical Information Management* (PANS-AIM) to enable the delivery of uniform aeronautical information services, as well as to provide a vehicle for the emerging technical requirements of AIM.

1.2 The Aeronautical Information Service (AIS) to Aeronautical Information Management (AIM) Study Group (AIS-AIMSG) is the expert group that was tasked to develop Standards and Recommended Practices (SARPs) and guidance material to support the transition from AIS to AIM environments and to enable the digital exchange of aeronautical data and information on a worldwide basis.

1.3 The AIS-AIMSG conducted a thorough review of the existing provisions and concluded that while the process to incorporate the AIM focus into Annex 15 is part of an evolutionary process, this would involve more than a modification to existing provisions. Some of the issues to be addressed were categorized as “the big questions” which include the definition of the scope, role and main functions of AIM, the AIM products and services and the associated update mechanisms. In order to facilitate the incorporation of the new technical requirements and provisions, it was decided to conduct a major restructuring of Annex 15.

2. RESTRUCTURING OF AIM DOCUMENTATION

2.1 In the proposed structure of Annex 15, requirements are organized in a way that allows the data collection activity to be decoupled from the definition of the end-products; this approach has been taken in order to facilitate the transition to a full AIM environment, under the all-embracing system-wide information management (SWIM) principles.

2.2 Furthermore, the AIS-AIMSG noted that material that is too prescriptive, detailed or procedural in nature is either relegated to a guidance document or elevated for incorporation in an Annex. Moreover, the AIS-AIMSG considered that ICAO has been given direction to avoid technical specifications in SARPs in favour of performance requirements.

2.3 It was therefore suggested that the creation of a PANS-AIM document and a quick update of associated manuals would benefit the global shift from traditional AIS to AIM. As a result, the AIS-AIMSG proceeded with the development of the PANS-AIM to include material from Annex 15 and the *Aeronautical Information Services Manual* (Doc 8126), where appropriate, in addition to any new material related to AIM.

2.4 Guidance material to support the implementation of the proposed requirements is planned to be developed by the applicability date.

3. THE NEW PROVISIONS FOR AIM

3.1 The proposed amendments to Annex 15 and the new PANS-AIM document propose the following main technical changes:

- a) *Split of data origination requirements from data publication requirements.* The end-users who make use of the information transferred by an AIS should not rely exclusively on the structure and format of the messages but need to be free to manage the data and combine it with other data to construct the final view appropriate to their need. The proposed amendment allows the data collection activity to be decoupled from the definition of end-products. This is a fundamental principle that needs to be applied in the transition to a SWIM environment.
- b) *Introduction of the Aeronautical Data Catalogue.* The objective of the development of the aeronautical data catalogue is to provide a general description of the AIM data scope and consolidate all aeronautical data and aeronautical information to be collected and maintained by an AIS organization. The data catalogue provides a means for States to facilitate the identification of the organizations and authorities responsible for the origination of the aeronautical data and information. It also provides a common language and facilitates the formal arrangements between data originators and the aeronautical information service. It includes data quality requirements applicable from origination through to publication.
- c) *Digital data sets.* The full move into an automated data-centric environment requires the introduction of digital data sets. Providing the data in digital form represents a paradigm shift in the way information is handled along its life cycle. This is an important step forward in the implementation of AIM under the all-embracing SWIM principles.
- d) *Aeronautical information product.* The term aeronautical information product has been introduced to compile all the AIS deliverables to be provided in either digital data sets or as a standardized presentation in either paper or electronic form. The term is supposed to replace the term “Aeronautical Information Package” that is considered obsolete and not in line with the new AIM concepts.
- e) *Data quality requirements.* Whilst the industry standards (EUROCAE ED76A / RTCA DO200B) require seven characteristics of data quality (accuracy, resolution, integrity, timeliness, completeness, traceability and format), Annex 15 currently only includes three characteristics (accuracy, resolution and integrity). The proposed amendment aims to solve this inconsistency by updating the data quality definition, adding four additional definitions of the data quality characteristics and updating the provisions to include the new quality characteristics.
- f) *New terminology.* This amendment introduces new defined terms. These new definitions will bring further clarity to the introduction of “digital data” and what it means in relation to AIS/AIM provisions.

- g) *NOTAM improvement proposal.* In order to make NOTAM more “fit for purpose”, several additional operational conditions are included in the provisions to properly identify when a NOTAM shall or shall not be originated.
- h) *CRC performance-based requirements.* The current prescriptive specification for 32-bit CRCs can be seen to be difficult and maybe even impossible to comply with. The proposed amendment introduces performance-based requirements to maintain data integrity by implementing a mechanism to detect errors in digital data introduced during transmission or storage.
- i) *Clarification of requirements.* The work done with respect to the restructuring of Annex 15 and the creation of a new PANS-AIM has also created an opportunity to provide clarification to existing provisions. Terms that are more in line with AIM concepts have been introduced, provisions have been rephrased and extended to make the requirements more distinct, and redundant elements have been deleted.

3.2 The proposed amendment to Annex 15 presents a separate proposal on the SNOWTAM format which, unlike other amendments, has an applicability date of 5 November 2020. The amendment involves the relocation of the SNOWTAM material to the PANS-AIM, it fixes a certain number of inconsistencies in the SNOWTAM template and aligns the examples accordingly. Amendment 39-B to Annex 15, also with the 2020 applicability date, had already involved modification to the SNOWTAM format as a consequential change to the introduction of the global reporting format for assessing and reporting runway surface conditions.

4. **PROCEDURES FOR AIR NAVIGATION SERVICES (PANS) — AERONAUTICAL INFORMATION MANAGEMENT (DOC 10066)**

4.1 Procedures for Air Navigation Services (PANS) for the most part comprise material which may eventually become Standards when it has achieved the maturity and stability necessary for adoption as such, or material that is considered too detailed for SARPs and that amplifies the basic principles contained in corresponding SARPs to assist in their application. Since PANS primarily consist of material related to the standardization of how something is to be done, material such as product specifications, standard procedures, and protocols are ideal for promulgation as PANS.

4.2 Following these principles, the PANS-AIM provides a detailed description of the AIM functions, products and services and outlines the data origination requirements and the procedures according to which data shall be collected and transmitted to the AIS in accordance with accuracy, resolution and integrity classification requirements.

4.3 The PANS-AIM contains specifications concerning the provision of aeronautical information products in a standardized presentation (in printed or electronic form), which includes the Aeronautical Information Publication (AIP), AIP amendments and supplements and aeronautical information circulars (AIC), aeronautical charts and NOTAMs. General provisions for digital data are also explained and specific details are provided on the various data sets – AIP data sets, terrain and obstacle data sets, aerodrome mapping data sets and instrument flight procedure data sets. Finally, the PANS-AIM outlines the aeronautical information regulation and control (AIRAC) requirements and details on how to update aeronautical information products and services.

4.4 All the specifications published within the PANS-AIM provide a means for increased harmonization within the domain of AIS/AIM and span the gap between the guidance contained in Doc 8126 and the SARPs embodied in Annex 15. Additionally, PANS-AIM provides a vehicle for expanded and/or new specifications for digital data sets and digital data exchange where it was found desirable to have a level of standardization but where the material was too detailed or not appropriate for inclusion in Annex 15.

4.5 The PANS-AIM is expected to become the daily reference for the existing and future AIS and AIM officers and the basis for the provision of uniform aeronautical information services.

5. STATUS OF GUIDANCE MATERIAL

5.1 There are several documents concerning the AIM domain that need to be updated as they are essential for a successful implementation of the AIM provisions. ICAO is planning for the appropriate development of guidance material before the amendment to Annex 15 and the new PANS-AIM become effective.

5.2 The *Aeronautical Information Services Manual* (Doc 8126) is the first priority as it needs to be amended in conjunction with the restructured Annex 15 and the new PANS-AIM. The plan is to divide the document in different volumes to address specific audiences, ensuring a faster delivery and an easier maintenance of each volume.

5.3 A draft *Manual of the Quality Management System (QMS) for Aeronautical Information Management* has been drafted by the AIS-AIMSG but needs a thorough revision in order to reduce the focus on ISO standards, detail how a QMS is applied to AIM processes and explain the importance of a QMS as a foundation for trust.

5.4 The *AIM Training Development Manual* (Doc 9991) has been drafted by the AIS-AIMSG but needs a complete revision to be in line with the competency-based approach as explained in the *Procedures for Air Navigation Services — Training* (PANS-Training, Doc 9868).

6. IMPACT ASSESSMENTS

6.1 The restructuring of Annex 15 and the introduction of a new PANS-AIM document will reorganize the AIM documentation to ensure high-level requirements are embodied in Annex 15, technical specifications and operating procedures are incorporated into the PANS-AIM and guidance material is developed to support implementation. The restructuring of AIM provisions has a minimal impact on States; on the contrary, it ensures that requirements are properly explained and promotes a better understanding of the AIM principles.

6.2 The impact of the new technical changes on States and industry is also minimal and, in fact, will improve aeronautical information management through faster, quality controlled exchange of aeronautical data. Moving from AIS to AIM is an evolutionary process; States will need to assess their own requirements and needs with respect to AIM and implement accordingly.

ATTACHMENT B to State letter AN 2/2.1.1-17/22

PROPOSED AMENDMENT TO ANNEX 15

TABLE OF CONTENTS AND MAPPING OF RELOCATED TEXT

NOTES ON THE PRESENTATION OF THE PROPOSED AMENDMENT

The text of the amendment is arranged to show deleted text with a line through it and new text highlighted with grey shading, as shown below:

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Text to be deleted

New text to be inserted is highlighted with grey shading.

New text to be inserted

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followed by the replacement text which is highlighted
with grey shading.

New text to replace existing text

TEXT OF PROPOSED AMENDMENT TO THE

INTERNATIONAL STANDARDS

AND RECOMMENDED PRACTICES

AERONAUTICAL INFORMATION SERVICES

ANNEX 15

TO THE CONVENTION ON INTERNATIONAL CIVIL AVIATION

INITIAL PROPOSAL 1

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The following table provides an overview of where existing Annex 15 requirements will be relocated:

Existing edition of Annex 15	New edition of Annex 15	PANS-AIM
Chapter 1. General	Chapter 1. General	-
Chapter 2. Responsibilities and functions	Chapter 2. Responsibilities and functions	-
Chapter 3. Aeronautical information management	Chapter 3. Aeronautical information management	-
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Appendix 8. Terrain and obstacle data requirements	-	APPENDIX 8. Terrain and obstacle data requirements APPENDIX 6. Terrain and Obstacle Attributes Provision Requirements

<i>Origin</i>	<i>Rationale</i>
AIS-AIMSG	While it was understood that the process of incorporating the AIM focus into Annex 15 is part of an evolutionary transition of traditional AIS to AIM, it was nevertheless recognized that this would involve more than a modification of existing provisions or extensions to the current document. Some of the issues to be addressed were categorized as “the big questions” which include the definition of the scope of AIM, the role of AIM, the functions of AIM, the products and services of AIM, the aeronautical information updates (including the AIRAC cycle). To properly answer these questions, the need to restructure Annex 15 was acknowledged. The principle focus has been the redevelopment of Chapters 4 to 11 and the restructuring of the existing SARPs into three new chapters: Chapter 4 — <i>Scope of Aeronautical Data and Information</i>, Chapter 5 — <i>Information Products and Services</i>, Chapter 6 — <i>Aeronautical Information Updates</i>. In the proposed structure of Annex 15, the principle focus of Chapter 4 is information and data to be collected from “originators”. This is in contrast to Chapter 5 where the focus is the identification of the information products and services required by users. This approach allows the data collection activity to be decoupled from the definition of the end products and that facilitates the transition to a full AIM environment. Chapter 6 covers the AIRAC and temporality issues. Additionally, the 37th Assembly established that the provisions contained in the Annexes become more performance oriented while the more technical specifications, to the extent that they are needed, would be found in other documents. Consequently, Annex 15 has been restructured to include only high-level specifications; selected parts concerning procedures, processes and protocols have been moved to the new PANS-AIM document as appropriate.

ATTACHMENT C to State letter AN 2/2.1.1-17/22

PROPOSED AMENDMENT TO ANNEX 15 — INDICATION OF TEXT RELOCATION

NOTES ON THE PRESENTATION OF THE AMENDMENT

The text of the amendment is arranged to show existing text in the new location with a double underlining and text to be relocated with a double strikethrough it, as shown below:

~~Text to be relocated is shown with a double strikethrough~~

Text to be relocated

Existing text shown in the new location are double underlined.

Existing text in the new location

New text to be inserted is highlighted with grey shading.

New text to be inserted

~~Text to be deleted is shown with a line through it.~~

Text to be deleted

**TEXT OF PROPOSED AMENDMENT TO THE
INTERNATIONAL STANDARDS
AND RECOMMENDED PRACTICES**

AERONAUTICAL INFORMATION SERVICES

**ANNEX 15
TO THE CONVENTION ON INTERNATIONAL CIVIL AVIATION**

INITIAL PROPOSAL 1

CHAPTER 1. GENERAL

Note 1.— The object of the aeronautical information service (AIS) is to ensure the flow of aeronautical data and aeronautical information necessary for global air traffic management (ATM) system safety, regularity, economy and efficiency in an environmentally sustainable manner. The role and importance of aeronautical data and aeronautical information changed significantly with the implementation of area navigation (RNAV), performance-based navigation (PBN), airborne computer-based navigation systems, performance-based communication (PBC), performance-based surveillance (PBS), data link systems and satellite voice communications (SATVOICE). Corrupt, erroneous, late, or missing aeronautical data and aeronautical information can potentially affect the safety of air navigation.

Note 2.— These Standards and Recommended Practices are to be used in conjunction with the Procedures for Air Navigation Services — ICAO Abbreviations and Codes (PANS-ABC, Doc 8400).

~~*Note 3.— Guidance material on the organization and operation of aeronautical information services is contained in the Aeronautical Information Services Manual (Doc 8126).*~~

Editorial Note.— Note 3 is relocated to Note 4 of the new edition of Annex 15.

Note 3.— New text

Note 4.— Guidance material on the organization and operation of aeronautical information services is contained in the Aeronautical Information Services Manual (Doc 8126).

Editorial Note.— Note 4 is relocated text from Note 3 to Chapter 1.

1.1 Definitions

When the following terms are used in the Standards and Recommended Practices for aeronautical information services, they have the following meanings:

Accuracy. A degree of conformance between the estimated or measured value and the true value.

Note.— For measured positional data the accuracy is normally expressed in terms of a distance from a stated position within which there is a defined confidence of the true position falling.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Air traffic management (ATM). The dynamic, integrated management of air traffic and airspace (including air traffic services, airspace management and air traffic flow management) — safely,

economically and efficiently — through the provision of facilities and seamless services in collaboration with all parties and involving airborne and ground-based functions.

AIS product. Aeronautical data and aeronautical information provided in the form of the elements of the Integrated Aeronautical Information Package (except NOTAM and PIB), including aeronautical charts, or in the form of suitable electronic media.

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

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

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

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

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

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

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

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

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

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

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

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

Automatic terminal information service (ATIS). The automatic provision of current, routine information to arriving and departing aircraft throughout 24 hours or a specified portion thereof:

Data link-automatic terminal information service (D-ATIS). The provision of ATIS via data link.

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

Voice-automatic terminal information service (Voice-ATIS). The provision of ATIS by means of continuous and repetitive voice broadcasts.

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

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

Canopy. Bare Earth supplemented by vegetation height.

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

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

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

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

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

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

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

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

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

Data quality. A degree or level of confidence that the data provided meet the requirements of the data user in terms of accuracy, resolution and integrity.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Integrated Aeronautical Information Package. A package in paper, or electronic media which consists of the following elements:

- AIP, including amendment service;
- Supplements to the AIP;
- NOTAM and PIB;
- AIC; and
- checklists and lists of valid NOTAM.

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

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

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

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

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

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

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

Metadata. Data about data (ISO 19115*).

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

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

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

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

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

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

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

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

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

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

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

- a) are located on an area intended for the surface movement of aircraft; or
- b) extend above a defined surface intended to protect aircraft in flight; or
- c) stand outside those defined surfaces and that have been assessed as being a hazard to air navigation.

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

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

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

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

Performance-based navigation (PBN). Area navigation based on performance requirements for aircraft operating along an ATS route, on an instrument approach procedure or in a designated airspace.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Note.— In practical terms, depending on the method of data collection used, terrain represents the continuous surface that exists at the bare Earth, the top of the canopy or something in-between, also known as “first reflective surface”.

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

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

— the origin of materials and parts;

— the processing history; and

— the distribution and location of the product after delivery.

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

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

Note 1.— The term “verified” is used to designate the corresponding status.

Note 2.— Confirmation can comprise activities such as:

- performing alternative calculations;
- comparing a new design specification with a similar proven design specification;
- undertaking tests and demonstrations; and
- reviewing documents prior to issue.

VOLMET. Meteorological information for aircraft in flight.

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

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

1.2 Common reference systems for air navigation

1.2.1 Horizontal reference system

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

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

~~*Note 2.— Specifications governing the determination and reporting (accuracy of field work and data integrity) of WGS-84 related aeronautical coordinates for geographical positions established by air traffic services are given in Annex 11, Chapter 2, and Appendix 5, Table 1, and for aerodrome/heliport-related positions, in Annex 14, Volumes I and II, Chapter 2, and Table A5-1 and Table 1 of Appendices 5 and 1, respectively.*~~

Editorial Note.— Note 2 is deleted and rationale is provided in Attachment D, IP 26.

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

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

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

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

~~1.2.1.3 Geographical coordinates that have been transformed into WGS-84 coordinates but whose accuracy of original field work does not meet the requirements in Annex 11, Chapter 2, and Annex 14, Volumes I and II, Chapter 2, shall be identified by an asterisk.~~

Editorial Note.— 1.2.1.3 is relocated to the new PANS-AIM, 4.1.4.

~~1.2.1.4 The order of publication resolution of geographical coordinates shall be that specified in Table A7-1 of Appendix 7 while the order of chart resolution of geographical coordinates shall be that specified in Annex 4, Appendix 6, Table 1.~~

Editorial Note.— 1.2.1.4 is relocated to the new edition of Annex 15, 5.2.5.5.

1.2.2 Vertical reference system

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

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

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

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

~~1.2.2.3 At those geographical positions where the accuracy of EGM-96 does not meet the accuracy requirements for elevation and geoid undulation specified in Annex 14, Volumes I and II, on the basis of EGM-96 data, regional, national or local geoid models containing high resolution (short wavelength) gravity field data shall be developed and used. When a geoid model other than the EGM-96 model is used, a description of the model used, including the parameters required for height transformation between the model and EGM-96, shall be provided in the Aeronautical Information Publication (AIP).~~

~~Note.— Specifications governing determination and reporting (accuracy of field work and data integrity) of elevation and geoid undulation at specific positions at aerodromes/heliports are given in Annex 14, Volumes I and II, Chapter 2, and Table A5-2 and Table 2 of Appendices 5 and 1, respectively.~~

Editorial Note.— 1.2.2.3 and the Note are moved to the new PANS-AIM, 4.1.5 and Note.

~~1.2.2.4 In addition to elevation referenced to the MSL (geoid), for the specific surveyed ground positions, geoid undulation (referenced to the WGS-84 ellipsoid) for those positions specified in Appendix 1 shall also be published.~~

Editorial Note.— 1.2.2.4 is moved to the new PANS-AIM, 4.1.6.

~~1.2.2.5 The order of publication resolution of elevation and geoid undulation shall be that specified in Table A7-2 of Appendix 7 while the order of chart resolution of elevation and geoid undulation shall be that specified in Annex 4, Appendix 6, Table 2.~~

Editorial Note.— 1.2.2.5 is relocated to the new edition of Annex 15, 5.2.5.6.

1.2.3 Temporal reference system

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

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

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

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

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

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

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

1.3 Miscellaneous specifications

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

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

1.3.3 **Recommendation.**— *Units of measurement 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.*

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

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

CHAPTER 2. RESPONSIBILITIES AND FUNCTIONS

2.1 State responsibilities

2.1.1 Each Contracting State shall:

- a) provide an aeronautical information service (AIS); 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 and Recommended Practices of this Annex are adequately met.

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

2.1.3 The State concerned shall remain responsible for the aeronautical data and aeronautical information provided in accordance with 2.1.2. Aeronautical data and aeronautical information provided for and on behalf of a State shall clearly indicate that they are provided under the authority of that State.

2.1.4 Each Contracting State shall ensure that the aeronautical data and aeronautical information provided are complete, timely and of required quality in accordance with 3.3.

2.1.5 Each Contracting State 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.

Note.— *New text*

2.2 AIS responsibilities and functions

2.2.1 An AIS shall ensure that aeronautical data and aeronautical information necessary for the safety, regularity or 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 air traffic services unit responsible for flight information service and the services responsible for pre-flight information.

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

2.2.2 An AIS shall receive, collate or assemble, edit, format, publish/store and distribute aeronautical data and aeronautical information concerning the entire territory of the State as well as those

areas over the high seas in which the State is responsible for the provision of air traffic services. Aeronautical data and aeronautical information shall be provided as an Integrated Aeronautical Information Package.

Note.— An AIS may include origination functions.

2.2.3 Where 24-hour service is not provided, service shall be available during the whole period an aircraft is in flight in the area of responsibility of 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.

2.2.4 An AIS shall, in addition, obtain aeronautical data and aeronautical information to enable it to provide pre-flight information service and to meet the need for in-flight information:

- a) from the AIS of other States;
- b) from other sources that may be available.

Note.— One such source is the subject of a provision in 8.3.

2.2.5 Aeronautical data and aeronautical information obtained under 2.2.4 a) shall, when distributed, be clearly identified as having the authority of the originating State.

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

2.2.7 An AIS shall 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 2.2.1.

2.3 Exchange of aeronautical data and aeronautical information

2.3.1 Each State shall designate the office to which all elements of the Integrated Aeronautical Information Package originated by other States shall be addressed. Such an office shall be qualified to deal with requests for aeronautical data and aeronautical information originated by other States.

~~2.3.2 Where more than one international NOTAM office is designated within a State, the extent of responsibility and the territory covered by each office shall be defined.~~

Editorial Note.— 2.3.2 is relocated to the new edition of Annex 15, 2.3.3.

2.3.2 **Recommendation.**— *New text*

Note.— New text

~~2.3.3 An AIS shall arrange, as necessary, to satisfy operational requirements for the issuance and receipt of NOTAM distributed by telecommunication.~~

Editorial Note.— 2.3.3 is relocated both to the new edition of Annex 15, 2.3.4, and the new PANS-AIM, 5.4.2.1.

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

Editorial Note.— 2.3.3 is relocated text from 2.3.2.

~~2.3.4 Wherever practicable, direct contact between AIS shall be established in order to facilitate the international exchange of aeronautical data and aeronautical information.~~

Editorial Note.— 2.3.4 is relocated to the new edition of Annex 15, 2.3.5.

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

Editorial Note.— 2.3.4 is relocated text from 2.3.3.

~~2.3.5 One copy of each of the elements of the Integrated Aeronautical Information Package that have been requested by the AIS of a Contracting State shall be made available by the originating State in the mutually agreed form(s), without charge, even where authority for publication/storage and distribution has been delegated to a non-governmental agency.~~

Editorial Note.— 2.3.5 is relocated to the new edition of Annex 15, 2.3.6.

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

Editorial Note.— 2.3.5 is relocated text from 2.3.4.

~~2.3.6 **Recommendation.**— The exchange of more than one copy of the elements of the Integrated Aeronautical Information Package and other air navigation documents, including those containing air navigation legislation and regulations, should be subject to bilateral agreement between ICAO Contracting States.~~

Editorial Note.— 2.3.6 is relocated to the new edition of Annex 15, 2.3.7.

2.3.6 One copy of each of the elements of the Integrated Aeronautical Information Package that have been requested by the AIS of a Contracting State shall be made available by the originating State in the mutually-agreed form(s), without charge, even where authority for publication/storage and distribution has been delegated to a non-governmental agency.

Editorial Note.— 2.3.6 is relocated text from 2.3.5.

~~2.3.7 **Recommendation.**— The procurement of aeronautical data and aeronautical information, including the elements of the Integrated Aeronautical Information Package, and other air navigation documents, including those containing air navigation legislation and regulations, by States other than Contracting States and by other entities should be subject to separate agreement with the originating State.~~

Editorial Note.— 2.3.7 is relocated to the new edition of Annex 15, 2.3.9.

2.3.7 Recommendation.— The exchange of more than one copy of the elements of the Integrated Aeronautical Information Package and other air navigation documents, including those containing air navigation legislation and regulations, should be subject to bilateral agreement between Contracting States.

Editorial Note.— 2.3.7 is relocated text from 2.3.6.

2.3.8 New text

Note.— New text

2.3.9 Recommendation.— The procurement of aeronautical data and aeronautical information, including the elements of the Integrated Aeronautical Information Package, and other air navigation documents, including those containing air navigation legislation and regulations, by States other than Contracting States and by other entities should be subject to separate agreement with the originating State.

Editorial Note.— 2.3.9 is relocated text from 2.3.7.

2.3.10 New text

Note 1.— New text

Note 2.— Guidance on the aeronautical information and data exchange models may be found in Doc 8126.

Editorial Note.— Note 2 is relocated text from Note to 3.6.3.

2.4 Copyright

Note.— In order to protect the investment in the products of a State's AIS as well as to ensure better control of their use, States may wish to apply copyright to those products in accordance with their national laws.

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

Editorial Note.— 2.4.1 is relocated text from 2.4.

2.4.2 New text

2.5 Cost recovery

Recommendation.— *The overhead cost of collecting and compiling aeronautical data and aeronautical information should 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).*

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

CHAPTER 3. AERONAUTICAL INFORMATION MANAGEMENT

3.1 Information management requirements

The information management resources and processes established by an aeronautical information service (AIS) 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.

3.2 Data quality specifications

~~3.2.1 Material to be issued as part of the Integrated Aeronautical Information Package shall be thoroughly checked before it is submitted to the AIS, in order to make certain that all necessary information has been included and that it is correct in detail prior to distribution.~~

Editorial Note.— 3.2.1 is relocated to the new edition of Annex 15, 3.3.1.

3.2.1 Data Accuracy

The order of accuracy for aeronautical data shall be as specified in Annex 11, Chapter 2, and Annex 14, Volumes I and II, Chapter 2. In that respect, three types of positional data shall be identified: surveyed points (runway thresholds, navigation aid positions, etc.), calculated points (mathematical calculations from the known surveyed points of points in space/fixes) and declared points (e.g. flight information region boundary points).

Note.— The accuracy requirements for electronic terrain and obstacle data are specified in Appendix 8.

Editorial Note.— 3.2.1 is relocated text from 3.3.1.

~~3.2.2 An AIS shall establish verification and validation procedures which ensure that upon receipt of aeronautical data and aeronautical information, quality requirements (accuracy, resolution, integrity and traceability) are met.~~

Note 1.— Guidance material on liaison with other related services is contained in the Aeronautical Information Services Manual (Doc 8126).

Editorial Note.— 3.2.2 is relocated to the new edition of Annex 15, 3.3.2, and Note 1 is deleted and the rationale is provided in Attachment D, IP 2.

~~*Note 2.*— Guidance material on the aeronautical data quality requirements (accuracy, resolution, integrity, and traceability and protection requirements) may be found in the World Geodetic System 1984 (WGS 84) Manual (Doc 9674). Supporting data quality material in respect of data accuracy, publication resolution, and integrity of aeronautical data, together with guidance material in respect to the rounding convention for aeronautical data, is contained in Radio Technical Commission for Aeronautics (RTCA) Document DO-201A and European Organization for Civil Aviation Equipment (EUROCAE) Document ED-77 Standards for Aeronautical Information (or equivalent).~~

~~Note 3.— Guidance material on the management of aeronautical data quality is included in the Manual on the Quality Management System for Aeronautical Information Services (Doc 9839)(to be developed).~~

Editorial Note.— Notes 2 (initial part) and 3 to 3.2.2 are relocated to the new PANS-AIM, Notes 2 and 4 to 2.1.2.1.

3.2.2 Data Resolution

The order of publication resolution of aeronautical data shall be as specified in Appendix 7.

Editorial Note.— 3.2.2 is relocated text from 3.3.2.1.

Note 1.— New text

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

Editorial Note.— Note 2 is relocated text from Note to 3.3.2.2.

3.2.3 Data Integrity

3.2.3.1 The integrity of aeronautical data shall be maintained throughout the data process from survey/origin to distribution to the next intended user (the entity that receives the aeronautical information from the aeronautical information service provider).

Note. — The integrity classification for aeronautical data shall be as specified in Tables A7-1 to A7-5 of Appendix 7.

Editorial Note.— 3.2.3.1 and the Note is relocated text from 3.3.3.1 and 3.3.3.2.

3.2.3.2 Based on the applicable integrity classification, the validation and verification procedures shall:

- a) for routine data: avoid corruption throughout the processing of the data;
 - b) for essential data: assure corruption does not occur at any stage of the entire process and include additional processes as needed to address potential risks in the overall system architecture to further assure data integrity at this level; and
 - c) for critical data: assure corruption does not occur at any stage of the entire process and include additional integrity assurance processes to fully mitigate the effects of faults identified by thorough analysis of the overall system architecture as potential data integrity risks.
-

Editorial Note.— 3.2.3.2 is relocated text from 3.3.3.2.

3.2.4 Data Traceability

3.2.4.1 ~~New text~~

3.2.5 ~~Data Timeliness~~

3.2.5.1 ~~New text~~

Note 1.— ~~New text~~

Note 2.— ~~New text~~

3.2.6 ~~Data Completeness~~

3.2.6.1 ~~New text~~

3.2.7 ~~Data Format~~

3.2.7.1 ~~New text~~

3.3 ~~Aeronautical data and aeronautical information validation and verification~~

~~3.3.1 Accuracy~~

~~The order of accuracy for aeronautical data shall be as specified in Annex 11, Chapter 2, and Annex 14, Volumes I and II, Chapter 2. In that respect, three types of positional data shall be identified: surveyed points (runway thresholds, navigation aid positions, etc.), calculated points (mathematical calculations from the known surveyed points of points in space/fixes) and declared points (e.g. flight information region boundary points).~~

~~*Note.—* The accuracy requirements for electronic terrain and obstacle data are specified in Appendix 8.~~

Editorial Note.— 3.3.1 and Note are relocated to the new edition of Annex 15, 3.2.1 and the new PANS-AIM, 4.1.2.

3.3.1 Material to be issued as part of the Integrated Aeronautical Information Package shall be thoroughly checked before it is submitted to the aeronautical information service, in order to make certain that all necessary information has been included and that it is correct in detail prior to distribution.

Editorial Note.— 3.3.1 is relocated text from 3.2.1.

~~3.3.2 Resolution~~

~~3.3.2.1 The order of publication resolution of aeronautical data shall be as specified in Appendix 7.~~

~~3.3.2.2 **Recommendation.** The resolution of the data features contained in the database should be commensurate with the data accuracy requirements.~~

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

Editorial Note.— 3.3.2.1, 3.3.2.2 and the Note are relocated to the new edition of Annex 15, 3.2.2, Notes 1 and 2.

3.3.2 An aeronautical information service shall establish verification and validation procedures which ensure that upon receipt of aeronautical data and aeronautical information, quality requirements (accuracy, resolution, integrity and traceability) are met.

Editorial Note.— 3.3.2 is relocated text from 3.2.2.

~~3.3.3 Integrity~~

~~3.3.3.1 The integrity classification for aeronautical data shall be as specified in Tables A7-1 to A7-5 of Appendix 7.~~

~~3.3.3.2 The integrity of aeronautical data shall be maintained throughout the data process from survey/origin to distribution to the next intended user (the entity that receives the aeronautical information from the AIS provider). Based on the applicable integrity classification, the validation and verification procedures shall:~~

- ~~a) for routine data: avoid corruption throughout the processing of the data;~~
- ~~b) for essential data: assure corruption does not occur at any stage of the entire process and include additional processes as needed to address potential risks in the overall system architecture to further assure data integrity at this level; and~~
- ~~c) for critical data: assure corruption does not occur at any stage of the entire process and include additional integrity assurance processes to fully mitigate the effects of faults identified by thorough analysis of the overall system architecture as potential data integrity risks.~~

Editorial Note.— 3.3.3.1 and 3.3.3.2 are relocated to the new edition of Annex 15, 3.2.3.1 and 3.2.3.2.

~~Note 1. Guidance material in respect to the processing of aeronautical data and aeronautical information is contained in RTCA Document DO-200A and European Organization for Civil Aviation Equipment (EUROCAE) Document ED-76 Standards for Processing Aeronautical Data.~~

~~Note 2. Error-producing faults in the entire process may be mitigated by additional data quality assurance techniques as may be required. These could include application tests for critical data (for example, by flight check); the use of security, logic, semantic, comparison, and redundancy checks; digital error detection; and the qualification of human resources and process tools such as hardware and software.~~

~~Note 3. Distribution to the next intended user will differ in the delivery method applied which may either be:~~

~~Physical distribution. The means by which aeronautical data and aeronautical information distribution is achieved through the delivery of a physical package, such as postal services; or~~

~~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.~~

~~Note 4. Different delivery methods and data media may require different procedures to ensure the required data quality.~~

Editorial Note.— Notes 1 to 4 are relocated to the new PANS-AIM as follows: Note 1 to Note to 2.2.1; Note 2 to Note to 2.1.3; Note 3 to 5.4.1.1; and Note 4 to 5.4.1.2.

3.4 Data error detection

~~3.4.1 Metadata shall be collected for aeronautical data processes and exchange points. This metadata collection shall be applied throughout the aeronautical information data chain, from survey/origin to distribution to the next intended user.~~

Editorial Note.— 3.4.1 is relocated to the new edition of Annex 15, 4.2.1 and 4.2.2.

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

Editorial Note.— Note to 3.4.1 is relocated to the new PANS-AIM, Note to 4.2.1.

3.4.1 New text

~~3.4.2 The metadata to be collected shall include, as a minimum:~~

- ~~a) the name of the organizations or entities performing any action of originating, transmitting or manipulating the data;~~
- ~~b) the action performed; and~~
- ~~c) the date and time the action was performed.~~

Editorial Note.— 3.4.2 is relocated to the new PANS-AIM, 4.2.1.

3.4.2 New text

Note.— New text

3.5 Use of automation

~~3.5.1 Aeronautical data and data sets shall be protected in accordance with data error detection, security, and authentication techniques.~~

~~Note.— The Aeronautical Information Services Manual (Doc 8126) contains guidance material on data error detection, security and authentication techniques.~~

Editorial Note.— 3.5.1 and Note are relocated to new edition of Annex 15, 3.4.1.

3.5.1 Automation shall be introduced with the objective of improving the timeliness, quality, efficiency and cost-effectiveness of aeronautical information services.

Note.— Guidance material on the development of databases and the establishment of data exchange services is contained in the Aeronautical Information Services Manual (Doc 8126).

Editorial Note.— 3.5.1 is relocated text from 3.6.1.

~~3.5.2 Electronic aeronautical data sets shall be protected by the inclusion in the data sets of a 32-bit cyclic redundancy check (CRC) implemented by the application dealing with the data sets. This shall apply to the protection of the integrity classification of data sets as specified in 3.3.3.~~

~~Note 1.— This requirement does not apply to the communications systems used for the transfer of data sets.~~

~~Note 2.— Guidance material on the use of a 32-bit CRC algorithm to implement a protection of electronic aeronautical data sets is contained in Doc 8126.~~

Editorial Note.— 3.5.2 and Notes 1 and 2 are relocated to the new edition of Annex 15, 3.4.2.

3.5.2 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.

Editorial Note.— 3.5.2 is relocated text from 3.6.3.

3.6 Quality management system

~~3.6.1 Automation shall be introduced with the objective of improving the timeliness, quality, efficiency and cost-effectiveness of aeronautical information services.~~

~~Note.— Guidance on the development of databases and the establishment of data exchange services may be found in the Aeronautical Information Services Manual (Doc 8126).~~

Editorial Note.— 3.6.1 and Note are relocated to the new edition of Annex 15, 3.5.1.

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

Note.— Guidance material is contained in the Manual on the Quality Management System for Aeronautical Information Services (Doc 9839)(to be developed).

Editorial Note.— 3.6.1 is relocated text from 3.7.1.

~~3.6.2 Where aeronautical data and aeronautical information are provided in multiple formats, processes shall be implemented to ensure data and information consistency between formats.~~

Editorial Note.— 3.6.2 is relocated to the new edition of Annex 15, 5.1.2.

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

Editorial Note.— 3.6.2 is relocated text from 3.7.2.

~~3.6.3 In order to meet the data quality requirements, automation shall:~~

- ~~a) enable digital aeronautical data exchange between the parties involved in the data processing chain; and~~
- ~~b) use aeronautical information exchange models and data exchange models designed to be globally interoperable.~~

Editorial Note.— 3.6.3 is relocated to the new edition of Annex 15, 3.5.2.

~~*Note.— Guidance on the aeronautical information and data exchange models may be found in (Doc 8126).*~~

Editorial Note.— Note to 3.6.3 is relocated to the new edition of Annex 15, Note to 2.3.10.

3.6.3 **Recommendation.**— The quality management system established in accordance with 3.7.1 should follow the ISO 9000 series of quality assurance standards, and be certified by an approved organization.

Editorial Note.— 3.6.3 is relocated text from 3.7.3.

~~3.6.4 **Recommendation.**— The aeronautical information model used should encompass the aeronautical data and aeronautical information to be exchanged.~~

Editorial Note.— 3.6.4 is relocated to the new PANS-AIM, 5.3.1.3.

3.6.4 Within the context of the established quality management system, the competencies and the associated knowledge, skills and abilities required for each function shall be identified, and personnel assigned to perform those functions shall be appropriately trained. Processes shall be in place to ensure

that personnel possess the competencies required to perform specific assigned functions. Appropriate records shall be maintained so that the qualifications of personnel can be confirmed. Initial and periodic assessments shall be established that require personnel to demonstrate the required competencies. Periodic assessments of personnel shall be used as a means to detect and correct shortfalls.

Editorial Note.— 3.6.4 is relocated text from 3.7.4.

~~3.6.5 **Recommendation.**— The aeronautical information model used should:~~

- ~~a) use the Unified Modelling Language (UML) to describe the aeronautical information features and their properties, associations and data types;~~
- ~~b) include data value constraints and data verification rules;~~
- ~~c) include provisions for metadata as specified in 3.4.2; and~~
- ~~d) include a temporality model to enable capturing the evolution of the properties of an aeronautical information feature during its life cycle.~~

Editorial Note.— 3.6.5 is relocated to the new PANS-AIM, 5.3.1.4.

3.6.5 Each quality management system shall include the necessary policies, processes and procedures, including those for the use of metadata, to ensure and verify that aeronautical data are 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.

Editorial Note.— 3.6.5 is relocated text from 3.7.5.

~~3.6.6 **Recommendation.**— The aeronautical data exchange model used should:~~

- ~~a) apply a commonly used data encoding format;~~
- ~~b) cover all the classes, attributes, data types and associations of the aeronautical information model detailed in 3.6.5; and~~
- ~~c) provide an extension mechanism by which groups of users can extend the properties of existing features and add new features which do not adversely affect global standardization.~~

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

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

Editorial Note.— 3.6.6 is relocated to the new PANS-AIM, 5.3.1.5.

3.6.6 The established quality management system shall provide users with the necessary assurance and confidence that distributed aeronautical data and aeronautical information satisfy the aeronautical data quality requirements for accuracy, resolution and integrity as specified in 3.2 and 3.3 and that the data traceability requirements are met through the provision of appropriate metadata as

specified in 3.4. The system shall also provide assurance of the applicability period of intended use of aeronautical data and aeronautical information as well as that the agreed distribution dates will be met.

Editorial Note.— 3.6.6 is relocated text from 3.7.6.

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

Editorial Note.— 3.6.7 is relocated text from 3.7.7.

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

Editorial Note.— 3.6.8 is relocated text from 3.7.8.

3.7 Human factors considerations

~~3.7.1 Quality management systems shall be implemented and maintained encompassing all functions of an AIS, as outlined in 2.2. The execution of such quality management systems shall be made demonstrable for each function stage.~~

~~Note. Guidance material is contained in the Manual on the Quality Management System for Aeronautical Information Services (Doc 9839)(to be developed).~~

Editorial Note.— 3.7.1 is relocated to the new edition of Annex 15, 3.6.1.

3.7.1 The organization of an AIS 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.

Editorial Note.— 3.7.1 is relocated text from 3.8.1.

~~3.7.2 Recommendation. Quality management should be applicable to the whole aeronautical information data chain from data origination to distribution to the next intended user, taking into consideration the intended use of data.~~

Editorial Note.— 3.7.2 is relocated to the new edition of Annex 15, 3.6.2.

~~Note 1. Quality management may be provided by a single quality management system or serial quality management systems.~~

~~Note 2. Letters of agreement concerning data quality between originator and distributor and between distributor and next intended user may be used to manage the aeronautical information data chain.~~

Editorial Note.— Notes 1 and 2 to 3.7.2 are relocated to the new PANS-AIM, Notes 1 and 3 to 3.1.3.

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

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

Editorial Note.— 3.7.2 and Note is relocated text from 3.8.2

~~3.7.3 **Recommendation.**— The quality management system established in accordance with 3.7.1 should follow the ISO 9000 series of quality assurance standards, and be certified by an approved organization.~~

Editorial Note.— 3.7.3 is relocated to the new edition of Annex 15, 3.6.3.

~~Note 1.— An ISO 9000 certificate issued by an accredited certification body would be considered an acceptable means of compliance.~~

~~Note 2.— International Organization for Standardization (ISO) 9000 series of quality assurance standards provide a basic framework for the development of a quality assurance programme and define the term “accredited certification body”. The details of a successful programme are to be formulated by each State and in most cases are unique to the State organization.~~

Editorial Note.— Notes 1 and 2 to 3.7.3 are relocated to the new PANS-AIM, Note 2 to 3.1.3.

~~Note 3.— Supporting material in respect of the processing of aeronautical data is contained in RTCA Document DO 200A and EUROCAE Document ED 76— Standards for Processing Aeronautical Data. These standards support the development and application of aeronautical databases.~~

Editorial Note.— Note 3 to 3.7.3 is deleted and the rationale is provided in Attachment D, IP 18.

~~3.7.4 Within the context of the established quality management system, the competencies and the associated knowledge, skills and abilities required for each function shall be identified, and personnel assigned to perform those functions shall be appropriately trained. Processes shall be in place to ensure that personnel possess the competencies required to perform specific assigned functions. Appropriate records shall be maintained so that the qualifications of personnel can be confirmed. Initial and periodic assessments shall be established that require personnel to demonstrate the required competencies. Periodic assessments of personnel shall be used as a means to detect and correct shortfalls.~~

Editorial Note.— 3.7.4 is relocated to the new edition of Annex 15, 3.6.4.

~~Note.— Guidance material concerning training methodology to ensure the competency of personnel is contained in the Aeronautical Information Management Training Development Manual (Doc 9991).~~

Editorial Note.— Note to 3.7.4 is relocated to the new PANS-AIM, Note 4 to 3.1.3.

~~3.7.5 Each quality management system shall include the necessary policies, processes and procedures, including those for the use of metadata, to ensure and verify that aeronautical data are traceable throughout the aeronautical information data chain so as to allow any data anomalies or errors detected in use to be identified by root cause, corrected and communicated to affected users.~~

~~3.7.6 The established quality management system shall provide users with the necessary assurance and confidence that distributed aeronautical data and aeronautical information satisfy the aeronautical data quality requirements for accuracy, resolution and integrity as specified in 3.2 and 3.3 and that the data traceability requirements are met through the provision of appropriate metadata as specified in 3.4. The system shall also provide assurance of the applicability period of intended use of aeronautical data and aeronautical information as well as that the agreed distribution dates will be met.~~

~~3.7.7 All necessary measures shall be taken to monitor compliance with the quality management system in place.~~

~~3.7.8 Demonstration of compliance of the quality management system applied shall be by audit. If nonconformity is identified, initiating action to correct its cause shall be determined and taken without undue delay. All audit observations and remedial actions shall be evidenced and properly documented.~~

Editorial Note.— 3.7.5 to 3.7.8 are relocated to the new edition of Annex 15, 3.6.5 to 3.6.8.

CHAPTER 4. SCOPE OF AERONAUTICAL DATA AND AERONAUTICAL INFORMATION

~~Note 1.— AIP are intended primarily to satisfy international requirements for the exchange of aeronautical information of a lasting character essential to air navigation. When practicable, the form of presentation is designed to facilitate their use in flight.~~

~~Note 2.— AIP constitute the basic information source for permanent information and long duration temporary changes.~~

Editorial Note.— Notes 1 and 2 are relocated to the new edition of Annex 15, 5.2.2.

Note 1.— *New text*

Note 2.— *New text*

4.1 Scope of aeronautical data and aeronautical information

~~4.1.1 An AIP shall contain, in three parts, sections and subsections uniformly referenced to allow for standardized electronic data storage and retrieval, current information relating to, and arranged under, those subjects enumerated in Appendix 1 that appear in roman type, except that when the AIP, or volume of the AIP, is designed basically to facilitate operational use in flight, the precise format and arrangement may be left to the discretion of the State provided that an adequate table of contents is included.~~

Editorial Note.— 4.1.1 is relocated to the new PANS-AIM, 5.2.1.2.5.

4.1.1 *New text*

Note 1.— *New text*

Note 2.— *New text*

~~4.1.1.1 **Recommendation.**— AIP should, in addition, contain current information relating to those subjects enumerated in Appendix 1 that appear in italic type.~~

Editorial Note.— 4.1.1.1 is deleted and the rationale is provided in Attachment D, IP 22.

~~4.1.2 AIP shall include in Part 1 — General (GEN):~~

- ~~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 a State in each significant case where an alternative course of action is provided for in ICAO Standards, Recommended Practices and Procedures.~~

Editorial Note.— 4.1.2 is relocated to the new edition of Annex 15, 5.2.2.1.

4.1.2 New text

Note.— *New text*

~~4.1.3 The aeronautical charts listed alphabetically below shall, when available for designated international aerodromes/ heliports, form part of the AIP, or be distributed separately to recipients of the AIP:~~

- ~~a) Aerodrome/Heliport Chart ICAO;~~
- ~~b) Aerodrome Ground Movement Chart ICAO;~~
- ~~c) Aerodrome Obstacle Chart ICAO Type A;~~
- ~~d) Aerodrome Terrain and Obstacle Chart ICAO (Electronic);~~
- ~~e) Aircraft Parking/Docking Chart ICAO;~~
- ~~f) Area Chart ICAO;~~
- ~~g) ATC Surveillance Minimum Altitude Chart ICAO;~~
- ~~h) Instrument Approach Chart ICAO;~~
- ~~i) Precision Approach Terrain Chart ICAO;~~
- ~~j) Standard Arrival Chart Instrument (STAR) ICAO;~~
- ~~k) Standard Departure Chart Instrument (SID) ICAO;~~
- ~~l) Visual Approach Chart ICAO.~~

~~*Note.*— A page pocket may be used in the AIP to include the Aerodrome Terrain and Obstacle Chart ICAO (Electronic) on appropriate electronic media.~~

Editorial Note.— 4.1.3 and Note are relocated to the new edition of Annex 15, 5.2.5.1.

~~4.1.4 Charts, maps or diagrams shall be used, when appropriate, to complement or as a substitute for the tabulations or text of AIP.~~

~~*Note.*— Where appropriate, charts produced in conformity with Annex 4, may be used to fulfil this requirement. Guidance material as to the specifications of index maps and diagrams included in AIP is contained in the Aeronautical Information Services Manual (Doc 8126).~~

Editorial Note.— 4.1.4 is relocated to the new PANS-AIM, 5.2.1.2.7.

4.2 Metadata

~~4.2.1 Each AIP shall be self-contained and shall include a table of contents.~~

~~Note.— If it is necessary by reason of bulk or for convenience, to publish an AIP in two or more parts or volumes, each of them will indicate that the remainder of the information is to be found in the other part(s) or volume(s).~~

Editorial Note.— 4.2.1 and Note are relocated to the new PANS-AIM, 5.2.1.2.3.

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

Editorial Note.— 4.2.1 is relocated text from 3.4.1 partially.

~~4.2.1.1 Each AIP shall not duplicate information within itself or from other sources.~~

~~4.2.1.2 When two or more States combine to issue a joint AIP, this shall be made clear both on the cover and in the table of contents.~~

~~4.2.2 **Recommendation.**— AIP should be published in loose leaf form unless the complete publication is reissued at frequent intervals.~~

Editorial Note.— 4.2.1.1 to 4.2.2 are relocated to the new PANS-AIM, 5.2.1.2.4, 5.2.1.2.2 and 5.2.3.1.1.

4.2.2 This metadata collection shall be applied throughout the aeronautical information data chain, from survey/origin to distribution to the next intended user.

Editorial Note.— 4.2.2 is relocated text from 3.4.1 partially.

Note.— New text

~~4.2.3 Each AIP shall be dated. In the case of AIP 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 of the information.~~

~~4.2.4 A checklist giving the current date of each page in the AIP series shall be reissued frequently to assist the user in maintaining a current publication. The page number/chart title and date of the checklist shall appear on the checklist itself.~~

~~4.2.5 Each AIP issued as a bound volume and each page of an AIP issued in loose leaf form shall be so annotated as to indicate clearly:~~

- ~~a) the identity of the AIP;~~
- ~~b) the territory covered and subdivisions when necessary;~~
- ~~c) the identification of the issuing State and producing organization (authority);~~
- ~~d) page numbers/chart titles;~~
- ~~e) the degree of reliability if the information is doubtful.~~

~~4.2.6 **Recommendation.** The sheet size should be no larger than 210 × 297 mm, except that larger sheets may be used provided they are folded to the same size.~~

Editorial Note.— 4.2.3 to 4.2.6 are relocated to the new PANS-AIM, 5.2.1.2.6 and 5.2.1.2.6.1; 5.2.3.1.10; 5.2.3.1.2; 5.2.3.1.11.

~~4.2.7 All changes to the AIP, or new information on a republished page, shall be identified by a distinctive symbol or annotation.~~

Editorial Note.— 4.2.7 is deleted and the rationale is provided in Attachment D, IP 22.

~~4.2.8 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.~~

Editorial Note.— 4.2.8 is relocated to the new PANS-AIM, 5.2.1.3.2.

~~4.2.9 AIP shall be amended or reissued at such regular intervals as may be necessary to keep them up to date. Recourse to hand amendments or annotations shall be kept to the minimum. The normal method of amendment shall be by means of replacement sheets.~~

~~4.2.9.1 The regular interval referred to in 4.2.9 shall be specified in the AIP, Part 1 — General (GEN).~~

~~Note. Guidance material on the establishment of intervals between publication dates of AIP Amendments is contained in Doc 8126.~~

Editorial Note.— 4.2.9 and 4.2.9.1 and Note are relocated to the new PANS-AIM, 5.2.1.3.1 and 6.1.2.1.

~~4.3 Specifications for AIP Amendments~~

~~4.3.1 Permanent changes to the AIP shall be published as AIP Amendments.~~

Editorial Note.— 4.3.1 is relocated to the new edition of Annex 15, 6.3.1.2.

~~4.3.2 Each AIP Amendment shall be allocated a serial number, which shall be consecutive.~~

~~4.3.3 Each AIP Amendment page, including the cover sheet, shall display a publication date.~~

~~4.3.4 Each AIRAC AIP Amendment page, including the cover sheet, shall display an effective date. When an effective time other than 0000 UTC is used, the effective time shall also be displayed on the cover sheet.~~

~~4.3.5 When an AIP Amendment is issued, it shall include references to the serial number of those elements, if any, of the Integrated Aeronautical Information Package which have been incorporated into the amendment.~~

~~4.3.6 A brief indication of the subjects affected by the amendment shall be given on the AIP Amendment cover sheet.~~

~~4.3.7 When an AIP Amendment will not be published at the established interval or publication date, a NIL notification shall be originated and distributed by the monthly plain language list of valid NOTAM required by 5.2.13.3.~~

Editorial Note.— 4.3.2 to 4.37 are relocated to the new PANS-AIM, 5.2.1.3.5; 5.2.1.3.6; 5.2.1.3.7 and 5.2.1.3.7.1; 5.2.1.3.8; 5.2.1.3.9; 6.1.2.2.

~~4.4 Specifications for AIP Supplements~~

~~4.4.1 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.~~

Editorial Note.— 4.4.1 is relocated to the new edition of Annex 15, 6.3.1.3.

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

Editorial Note.— Note to 4.4.1 is relocated to the new PANS-AIM, Note to 5.2.1.4.1.

~~4.4.2 Each AIP Supplement shall be allocated a serial number which shall be consecutive and based on the calendar year.~~

Editorial Note.— 4.4.2 is relocated to the new PANS-AIM, 5.2.1.4.1.

~~4.4.3 AIP Supplement pages shall be kept in the AIP as long as all or some of their contents remain valid.~~

Editorial Note.— 4.4.3 is relocated to new PANS-AIM, 5.2.3.1.16.

~~4.4.4 When an error occurs in an AIP Supplement or when the period of validity of an AIP Supplement is changed, a new AIP Supplement shall be published as a replacement.~~

~~Note.~~— ~~The requirements for NOTAM apply when time constraints do not allow sufficient time for the distribution of an AIP Supplement.~~

~~4.4.5 When an AIP Supplement is sent in replacement of a NOTAM, it shall include a reference to the serial number of the NOTAM.~~

Editorial Note.— 4.4.4 and Note and 4.4.5 are relocated to new PANS-AIM, 6.1.3.1 and 5.2.1.4.3.

~~4.4.6 A checklist of valid AIP Supplements shall be issued at intervals of not more than one month. This information shall be issued through the medium of the monthly plain language list of valid NOTAM required by 5.2.13.3.~~

Editorial Note.— 4.4.6 is relocated to both the new edition of Annex 15, 5.2.3.2 and the new PANS-AIM, 5.2.1.4.4.

~~4.4.7 Recommendation.— AIP Supplement pages should be coloured in order to be conspicuous, preferably in yellow.~~

~~4.4.8 Recommendation.— AIP Supplement pages should be kept as the first item in the AIP parts.~~

Editorial Note.— 4.4.7 and 4.4.8 are relocated to the new PANS-AIM, 5.2.3.1.14 and 5.2.3.1.15.

~~4.5 Distribution~~

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

Editorial Note.— 4.5 is relocated to the new edition of Annex 15, 5.4.1.2.

~~4.6 Electronic AIP (eAIP)~~

~~4.6.1 Recommendation.— The AIP, AIP Amendment, AIP Supplement and AIC should also be published in a format that allows for displaying on a computer screen and printing on paper.~~

~~Note 1.— This composite electronic document is named “Electronic AIP” (eAIP) and may be based on a format that allows for digital data exchange.~~

~~Note 2.— Guidance material for the production and provision of the eAIP is contained in Doc 8126.~~

~~4.6.2 When provided, the information content of the eAIP and the structure of chapters, sections and sub sections shall follow the content and structure of the paper AIP. The eAIP shall include files that allow for printing a paper AIP.~~

~~4.6.3 Recommendation.— When provided, the eAIP should be available on a physical distribution medium (CD, DVD, etc.) and/or online on the Internet.~~

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

Editorial Note.— 4.6.1 is relocated to Annex 15, 5.2.1.2; Notes to 4.6.1, paragraphs 4.6.2 and 4.6.3 are relocated to the new PANS-AIM, 5.2.4, 5.2.4.1 and 5.2.4.3, respectively.

CHAPTER 5. AERONAUTICAL INFORMATION PRODUCTS AND SERVICES

5.1 General

~~5.1.1 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.~~

~~Note 1.— Operationally significant changes concerning circumstances listed in Appendix 4, Part 1, are issued under the Aeronautical Information Regulation and Control (AIRAC) system specified in Chapter 6.~~

~~Note 2.— Information of short duration containing extensive text and/or graphics is published as an AIP Supplement (see Chapter 4, 4.4).~~

Editorial Note.— 5.1.1, Notes 1 and 2 are relocated to the new edition of Annex 15, 6.3.2.2.

5.1.1 New Text

Note.— *New text*

~~5.1.1.1 A NOTAM shall be originated and issued concerning the following information:~~

- ~~a) establishment, closure or significant changes in operation of aerodrome(s)/heliport(s) or runways;~~
- ~~b) establishment, withdrawal and significant changes in operation of aeronautical services (AGA, AIS, ATS, CNS, MET, SAR, etc.);~~
- ~~c) establishment, withdrawal and significant changes in operational capability of radio navigation and air-ground communication services. This includes: interruption or return to operation, change of frequencies, change in notified hours of service, change of identification, change of orientation (directional aids), change of location, power increase or decrease amounting to 50 per cent or more, change in broadcast schedules or contents, or irregularity or unreliability of operation of any radio navigation and air-ground communication services;~~
- ~~d) establishment, withdrawal or significant changes made to visual aids;~~
- ~~e) interruption of or return to operation of major components of aerodrome lighting systems;~~
- ~~f) establishment, withdrawal or significant changes made to procedures for air navigation services;~~
- ~~g) occurrence or correction of major defects or impediments in the manoeuvring area;~~
- ~~h) changes to and limitations on availability of fuel, oil and oxygen;~~

- ~~i) major changes to search and rescue facilities and services available;~~
- ~~j) establishment, withdrawal or return to operation of hazard beacons marking obstacles to air navigation;~~
- ~~k) changes in regulations requiring immediate action, e.g. prohibited areas for SAR action;~~
- ~~l) presence of hazards which affect air navigation (including obstacles, military exercises, displays, races and major parachuting events outside promulgated sites);~~
- ~~m) erecting or removal of, or changes to, obstacles to air navigation in the take-off/climb, missed approach, approach areas and runway strip;~~
- ~~n) establishment or discontinuance (including activation or deactivation) as applicable, or changes in the status of prohibited, restricted or danger areas;~~
- ~~o) establishment or discontinuance of areas or routes or portions thereof where the possibility of interception exists and where the maintenance of guard on the VHF emergency frequency 121.5 MHz is required;~~
- ~~p) allocation, cancellation or change of location indicators;~~
- ~~q) significant changes in the level of protection normally available at an aerodrome/heliport for rescue and fire fighting purposes. NOTAM shall be originated only when a change of category is involved and such change of category shall be clearly stated (see Annex 14, Volume I, Chapter 9, and Attachment A, Section 18);~~
- ~~r) presence or removal of, or significant changes in, hazardous conditions due to snow, slush, ice, radioactive material, toxic chemicals, volcanic ash deposition or water on the movement area;~~
- ~~s) outbreaks of epidemics necessitating changes in notified requirements for inoculations and quarantine measures;~~
- ~~t) forecasts of solar cosmic radiation, where provided;~~
- ~~u) an operationally significant change in volcanic activity, the location, date and time of volcanic eruptions and/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;~~
- ~~v) release into the atmosphere of radioactive materials or toxic chemicals following a nuclear or chemical incident, the location, date and time of the incident, the flight levels and routes or portions thereof which could be affected and the direction of movement;~~
- ~~w) establishment of operations of humanitarian relief missions, such as those undertaken under the auspices of the United Nations, together with procedures and/or limitations which affect air navigation; and~~
- ~~x) implementation of short term contingency measures in cases of disruption, or partial disruption, of air traffic services and related supporting services.~~

~~Note. — See Annex 11, 2.31 and Attachment C to that Annex.~~

~~5.1.1.2 **Recommendation.**— The need for origination of a NOTAM should be considered in any other circumstance which may affect the operation of aircraft.~~

Editorial Note.— 5.1.1.2 is deleted and the rationale is provided in Attachment D, IP 23.

~~5.1.1.3 The following information shall not be notified by NOTAM:~~

- ~~a) routine maintenance work on aprons and taxiways which does not affect the safe movement of aircraft;~~
- ~~b) runway marking work, when aircraft operations can safely be conducted on other available runways, or the equipment used can be removed when necessary;~~
- ~~c) temporary obstructions in the vicinity of aerodromes/heliports that do not affect the safe operation of aircraft;~~
- ~~d) partial failure of aerodrome/heliport lighting facilities where such failure does not directly affect aircraft operations;~~
- ~~e) partial temporary failure of air-ground communications when suitable alternative frequencies are known to be available and are operative;~~
- ~~f) the lack of apron marshalling services and road traffic control;~~
- ~~g) the unserviceability of location, destination or other instruction signs on the aerodrome movement area;~~
- ~~h) parachuting when in uncontrolled airspace under VFR (see 5.1.1.1 1)), when controlled, at promulgated sites or within danger or prohibited areas;~~
- ~~i) other information of a similar temporary nature.~~

Editorial Note.— 5.1.1.3 is relocated to the new edition of Annex 15, 6.3.2.4.

~~5.1.1.4 At least seven days' advance notice shall be given of the activation of established danger, restricted or prohibited areas and of activities requiring temporary airspace restrictions other than for emergency operations.~~

~~5.1.1.4.1 **Recommendation.**— Notice of any subsequent cancellation of the activities or any reduction of the hours of activity or the dimensions of the airspace should be given as soon as possible.~~

~~*Note.*— Whenever possible, at least 24 hours' advance notice is desirable, to permit timely completion of the notification process and to facilitate airspace utilization planning.~~

~~5.1.1.5 NOTAM notifying unserviceability of aids to air navigation, facilities or communication services shall give an estimate of the period of unserviceability or the time at which restoration of service is expected.~~

Editorial Note.— 5.1.1.4 to 5.1.1.5 are relocated to the new PANS-AIM, 6.1.4.3, 6.1.4.4 and 6.1.4.2.

~~5.1.1.6 When an AIP Amendment or an AIP Supplement is published in accordance with AIRAC procedures, a NOTAM shall be originated giving a brief description of the contents, the effective date and time, and the reference number of the amendment or supplement. This NOTAM shall come into force on the same effective date and time as the amendment or supplement and shall remain valid in the pre-flight information bulletin for a period of fourteen days.~~

~~Note.— Guidance material for the origination of NOTAM announcing the existence of AIRAC AIP Amendments or AIP Supplements (“Trigger NOTAM”) is contained in the Aeronautical Information Services Manual (Doc 8126).~~

Editorial Note.— 5.1.1.6 is relocated to the new edition of Annex 15, 6.3.2.1; and the first sentence is relocated to the new PANS-AIM, 6.1.4.8 and the second sentence and Note are relocated to the new PANS-AIM, 6.1.4.9 and Note to 6.1.4.12.

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

Editorial Note.— 5.1.2 is relocated text from paragraph 3.6.2.

5.2 Aeronautical information in a standardized presentation

~~5.2.1 Except as otherwise provided in 5.2.3 and 5.2.4, each NOTAM shall contain the information in the order shown in the NOTAM Format in Appendix 6.~~

Editorial Note.— 5.2.1 is relocated to the new PANS-AIM, 5.2.5.1.1.

5.2.1 New text

Note 1.— New text

Note 2.— New text

5.2.1.1 New text

5.2.1.2 **Recommendation.**— The AIP, AIP Amendment, AIP Supplement and AIC should also be published in a format that allows for displaying on a computer screen and printing on paper.

Editorial Note.— 5.2.1.2 is relocated from 4.6.1

~~5.2.2 Text of NOTAM 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.~~

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

Editorial Note.— 5.2.2 and Note are relocated to the new PANS-AIM, 5.2.5.1.2 and Note to 5.2.5.1.1.

5.2.2 Aeronautical Information Publication (AIP)

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

Note 2.— AIP constitute the basic information source for permanent information and long duration temporary changes.

Editorial Note.— Notes 1 and 2 are relocated text from Chapter 4.

~~5.2.2.1 When NOTAM are selected for international distribution, English text shall be included for those parts expressed in plain language.~~

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

Editorial Note.— 5.2.2.1 and Note are relocated to the new PANS-AIM, 5.2.5.1.3 and Note to 5.2.5.1.2.

5.2.2.1 Aeronautical Information Publications shall include in Part 1 — General (GEN):

- 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 a State in each significant case where an alternative course of action is provided for in ICAO Standards, Recommended Practices and Procedures.

Editorial Note.— 5.2.2.1 is relocated text from 4.1.2.

~~5.2.3 Information concerning snow, slush, ice and standing water on aerodrome/heliport pavements shall, when reported by means of a SNOWTAM, contain the information in the order shown in the SNOWTAM Format in Appendix 2.~~

Editorial Note.— 5.2.3 is relocated to the new PANS-AIM, 5.2.5.1.4.

5.2.3 AIP Supplement

5.2.3.1 A checklist of valid AIP Supplements shall be issued at intervals of not more than one month. This information shall be issued through the medium of the monthly plain-language list of valid NOTAM required by 5.2.13.3.

Note.— *New text*

Editorial Note.— 5.2.3.1 relocated text from 4.4.6.

~~5.2.4 Information concerning an operationally significant change in volcanic activity, a 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 3.~~

Editorial Note.— 5.2.4 is relocated to the new PANS-AIM, 5.2.5.1.6.

5.2.4 *Aeronautical Information Circulars (AIC)*

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

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

Editorial Note.— 5.2.4.1 relocated text from 7.1.1.1.

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

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

Editorial Note.— 5.2.4.2 is relocated text from 7.1.1.

5.2.4.3 *New text*

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

Note.— *New text*

Editorial Note.— 5.2.4.4 is relocated text from 7.2.5.

~~5.2.5 The NOTAM originator 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.~~

~~Note.— Letters A to Z, with the exception of S and T, may be used to identify a NOTAM series.~~

Editorial Note.— 5.2.5 and Note are relocated to the new PANS-AIM, 5.2.5.2.1 and 5.2.5.2.2.

5.2.5 Aeronautical Charts

Note.— *New text*

5.2.5.1 The aeronautical charts listed alphabetically below shall, when available for designated international aerodromes/ heliports, form part of the AIP, or be distributed separately to recipients of the AIP:

- a) Aerodrome/Heliport Chart — ICAO;
- b) Aerodrome Ground Movement Chart — ICAO;
- c) Aerodrome Obstacle Chart — ICAO Type A;
- d) Aerodrome Terrain and Obstacle Chart — ICAO (Electronic);
- e) Aircraft Parking/Docking Chart — ICAO;
- f) Area Chart — ICAO;
- g) ATC Surveillance Minimum Altitude Chart — ICAO;
- h) Instrument Approach Chart — ICAO;
- i) Precision Approach Terrain Chart — ICAO;
- j) Standard Arrival Chart — Instrument (STAR) — ICAO;
- k) Standard Departure Chart — Instrument (SID) — ICAO;
- l) Visual Approach Chart — ICAO.

Note.— A page pocket may be used in the AIP to include the Aerodrome Terrain and Obstacle Chart — ICAO (Electronic) on appropriate electronic media.

Editorial Note.— 5.2.5.1 is relocated text from 4.1.3.

5.2.5.2 *New text*

5.2.5.3 *New text*

5.2.5.4 *New text*

5.2.5.5 The order of publication resolution of geographical coordinates shall be that specified in Table A7-1 of Appendix 7 while the order of chart resolution of geographical coordinates shall be that specified in Annex 4, Appendix 6, Table 1.

~~5.2.5.6 The order of publication resolution of elevation and geoid undulation shall be that specified in Table A7.2 of Appendix 7 while the order of chart resolution of elevation and geoid undulation shall be that specified in Annex 4, Appendix 6, Table 2.~~

Editorial Note.— 5.2.5.5 is relocated text from 1.2.1.4. 5.2.5.6 is deleted and the rationale is provided in Attachment D, IP 3.

Note.— *New text*

~~5.2.6 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.~~

Editorial Note.— 5.2.6 is relocated to the new PANS-AIM, 5.2.5.1.6.

5.2.6 NOTAM

Note.— *New text*

5.2.6.1 A checklist of valid NOTAM shall be issued as a NOTAM over the Aeronautical Fixed Service (AFS) at intervals of not more than one month using the NOTAM Format specified in Appendix 6. One NOTAM shall be issued for each series.

Note.— *New text*

Editorial Note. — 5.2.6.1 is relocated text from 5.2.13.

~~5.2.7 When a NOTAM is issued which cancels or replaces a previous NOTAM, the series and number of the previous NOTAM shall be indicated. The series, location indicator and subject of both NOTAM shall be the same. Only one NOTAM shall be cancelled or replaced by a NOTAM.~~

~~5.2.8 Each NOTAM shall deal with only one subject and one condition of the subject.~~

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

~~5.2.9 Each NOTAM shall be as brief as possible and so compiled that its meaning is clear without the need to refer to another document.~~

~~5.2.10 Each NOTAM shall be transmitted as a single telecommunication message.~~

~~5.2.11 A NOTAM containing permanent or temporary information of long duration shall carry appropriate AIP or AIP Supplement references.~~

~~5.2.12 Location indicators included in the text of a NOTAM shall be those contained in Location Indicators (Doc 7910).~~

~~5.2.12.1 In no case shall a curtailed form of such indicators be used.~~

~~5.2.12.2 Where no ICAO location indicator is assigned to the location, its place name spelt in accordance with 1.3.2 shall be entered in plain language.~~

~~5.2.13 A checklist of valid NOTAM shall be issued as a NOTAM over the aeronautical fixed service (AFS) at intervals of not more than one month using the NOTAM Format specified in Appendix 6. One NOTAM shall be issued for each series.~~

~~Note. Omitting a NOTAM from the checklist does not serve to cancel a NOTAM.~~

~~5.2.13.1 A checklist of NOTAM shall refer to the latest AIP Amendments, AIP Supplements and at least the internationally distributed AIC.~~

~~5.2.13.2 A checklist of NOTAM shall have the same distribution as the actual message series to which they refer and shall be clearly identified as a checklist.~~

Editorial Note.— 5.2.7 to 5.2.13.2 are relocated to the new PANS-AIM, 5.2.5.1.7 to 5.2.5.1.14; and 5.2.5.3.1 to 5.2.5.3.4.

~~5.2.13.3 A monthly plain language list of valid NOTAM, including indications of the latest AIP Amendments, AIC issued and a checklist of AIP Supplements, shall be prepared with a minimum of delay and forwarded by the most expeditious means to recipients of the Integrated Aeronautical Information Package.~~

Editorial Note.— 5.2.13.3 is deleted and the rationale is provided in Attachment D, IP 23.

5.3 Digital data sets

~~5.3.1 NOTAM shall be distributed on the basis of a request.~~

Editorial Note.— 5.3.1 is relocated to the new edition of Annex 15, 5.4.1.1 and 5.4.2.1.

5.3.1 General

5.3.1.1 New text

Note.— New text

5.3.1.2 New text

Note.— New text

5.3.1.3 New text

~~5.3.2 NOTAM shall be prepared in conformity with the relevant provisions of the ICAO communication procedures.~~

Editorial Note.— 5.3.2 is relocated to the new edition of Annex 15, 5.4.2.2.

5.3.2 AIP data set

~~5.3.2.1 The AFS shall, whenever practicable, be employed for NOTAM distribution.~~

Editorial Note.— 5.3.2.1 is relocated to the new edition of Annex 15, 5.4.2.3.

5.3.2.1 New text

~~5.3.2.2 When a NOTAM exchanged as specified in 5.3.4 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.~~

Editorial Note.— 5.3.2.2 is relocated to the new edition of Annex 15, 5.4.2.4.

5.3.2.2 New text

5.3.2.3 New text

~~5.3.3 The originating State shall select the NOTAM that are to be given international distribution.~~

Editorial Note.— 5.3.3 is relocated to both the new edition of Annex 15, 5.4.2.4 and the new PANS-AIM.

5.3.3 Terrain and obstacle data sets

Note.— New text

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

— Area 1: the entire territory of a State;

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

— Area 2a: a rectangular area around a runway that comprises the runway strip plus any clearway that exists. Note.— See Annex 14, Volume I, Chapter 3, for dimensions for runway strip.

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

— Area 2c: an area extending outside Area 2a and Area 2b at a distance of not more than 10 km from the boundary of Area 2a; and

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

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

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

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

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

Editorial Note.— 5.3.3 is relocated text from 10.1.1 and 10.1.2.

~~5.3.3.1 **Recommendation.**— Selective distribution lists should be used when practicable.~~

~~*Note.*— These lists are intended to obviate superfluous distribution of information. Guidance material relating to this is contained in the Aeronautical Information Services Manual (Doc 8126).~~

Editorial Note.— 5.3.3.1 and Note are relocated to the new edition of Annex 15, 5.4.2.7.

5.3.3.3 Terrain data sets

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

Editorial Note.— 5.3.3.3.1 is relocated text from 10.2.1.

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

Editorial Note.— 5.3.3.3.2 is relocated text from 10.1.3.

5.3.3.3.3 At aerodromes regularly used by international civil aviation, electronic terrain data shall be provided for:

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

Editorial Note.— 5.3.3.3.3 is relocated text from 10.1.5.

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

Editorial Note.— 5.3.3.3.4 is relocated text from 10.1.7.

- a) Within the area covered by a 10-km radius from the ARP, terrain data shall comply with the Area 2 numerical requirements.

- b) In the area between 10 km and the TMA boundary or 45-km radius (whichever is smaller), data on terrain that penetrates the horizontal plane 120 m above the lowest runway elevation shall comply with the Area 2 numerical requirements.

Editorial Note.— Subparagraphs a) and b) are relocated text from Appendix 8, Figure A8-1. The revised paragraph 5.3.3.3.4 is shown in Attachment D.

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

Editorial Note.— 5.3.3.3.5 is relocated text from 10.1.11.

5.3.3.3.6 Recommendation.— At those aerodromes located near territorial boundaries, arrangements should be made among States concerned to share Area 2 electronic terrain and obstacle data.

Editorial Note.— 5.3.3.3.6 is relocated text from 10.1.12.

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

Editorial Note.— 5.3.3.3.7 is relocated text from 10.1.8.

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

Editorial Note.— 5.3.3.3.8 is relocated text from 10.1.9.

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

Editorial Note.— 5.3.3.3.9 is relocated text from 10.1.10.

5.3.3.4 Obstacle data sets

5.3.3.4.1 Obstacle data shall comprise the digital representation of the vertical and horizontal extent of the obstacle.

Editorial Note.— 5.3.3.4.1 is relocated text from 10.3.1 partially.

5.3.3.4.2 Obstacles shall not be included in terrain data sets. Obstacle data elements are features that shall be represented in the data sets by points, lines or polygons.

Editorial Note.— 5.3.3.4.2 is relocated text from 10.3.1 partially.

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

Editorial Note.— 5.3.3.4.3 is relocated text from para 10.1.3.

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

Editorial Note.— 5.3.3.4.4 is relocated text from 10.1.4.

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

- a) Area 2a for those obstacles that penetrate the relevant obstacle data collection surface specified in Appendix 8; Area 2a: a rectangular area around a runway that comprises the runway strip plus any clearway that exists. The Area 2a obstacle collection surface shall have height of 3 m above the nearest runway elevation measured along the runway centre line, and for those portions related to a clearway, if one exists, at the elevation of the nearest runway end;
- b) objects in the take-off flight path area which project above a plane surface having a 1.2 per cent slope and having a common origin with the take-off flight path area; and
- c) penetrations of the aerodrome obstacle limitation surfaces.

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

Editorial Note.— 5.3.3.4.5 is relocated text from 10.1.6. Specifically subparagraph a) is relocated text from Appendix 8. The revised paragraph is provided in Attachment D.

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

- a) Area 2b: an area extending from the ends of Area 2a in the direction of departure, with a length of 10 km and a splay of 15% to each side. The Area 2b obstacle collection surface has a 1.2% slope extending from the ends of Area 2a at the elevation of the runway end in the direction of departure, with a length of 10 km and a splay of 15% to each side.
- b) Area 2c: an area extending outside Area 2a and Area 2b at a distance of not more than 10 km from the boundary of Area 2a. The Area 2c obstacle collection surface has a 1.2% slope extending outside Area 2a and Area 2b at a distance of not more than 10 km from the boundary of Area 2a. The initial elevation of Area 2c shall be the elevation of the point of Area 2a at which it commences; and
- c) Area 2d: an area outside the Areas 2a, 2b and 2c up to a distance of 45 km from the

aerodrome reference point, or to an existing TMA boundary, whichever is nearest. The Area 2d obstacle collection surface has a height of 100 m above ground.

Editorial Note.— 5.3.3.4.6 is relocated text from 10.1.7. Specifically subparagraphs a), b) and c) are relocated text from Appendix 8. The revised paragraph is provided in Attachment D.

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

Editorial Note.— 5.3.3.4.7 is relocated text from 10.1.11.

5.3.3.4.8 **Recommendation.**— At those aerodromes located near territorial boundaries, arrangements should be made among States concerned to share Area 2 electronic terrain and obstacle data.

Editorial Note.— 5.3.3.4.8 is relocated text from 10.1.12.

5.3.3.4.9 **Recommendation.**— At aerodromes regularly used by international civil aviation, electronic terrain and obstacle data should be provided for Area 3 for terrain and obstacles that penetrate the relevant obstacle data collection surface specified in Appendix 8, Figure A8-3. The data collection surface for terrain and obstacles extends a half-metre (0.5 m) above the horizontal plane passing through the nearest point on the aerodrome movement area.

Editorial Note.— 5.3.3.4.9 is relocated text from 10.1.8 and Appendix 8.

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

Editorial Note.— 5.3.3.4.10 is relocated text from 10.1.9.

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

Editorial Note.— 5.3.3.4.11 is relocated text from 10.1.10.

~~5.3.4 International exchange of NOTAM shall take place only as mutually agreed between the international NOTAM offices concerned. The international exchange of ASHTAM (see 5.2.4), and NOTAM where States continue to use NOTAM for distribution of information on volcanic activity, shall include volcanic ash advisory centres and the centres designated by regional air navigation agreement for the operation of AFS satellite distribution systems (satellite distribution system for information relating to air navigation (SADIS) and international satellite communications system (ISCS)), and shall take account of the requirements of long-range operations.~~

~~Note. Arrangements may be made for direct exchange of SNOWTAM (see Appendix 2) between aerodromes/heliports.~~

Editorial Note.— The first sentence of 5.3.4 is relocated to Annex 15, 5.4.2.5. The rest of the paragraph is relocated to the new PANS-AIM, 5.4.2.2 and the Note to 5.4.2.1.

5.3.4 Aerodrome mapping data sets

~~5.3.4.1 These exchanges of NOTAM between international NOTAM offices shall, as far as practicable, be limited to the requirements of the receiving States concerned by means of separate series providing for at least international and domestic flights.~~

Editorial Note.— 5.3.4.1 is relocated to the new PANS-AIM, 5.4.2.3.

5.3.4.1 Aerodrome mapping data sets shall contain aerodrome mapping data consisting of aerodrome features.

Note 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.

Note 2.— Aerodrome mapping data feature definitions, constraints and rules applicable to aerodrome mapping data are contained in RTCA Document DO-272C and EUROCAE Document ED-99C — User Requirements for Aerodrome Mapping Information. These constraints ensure the connectivity between features on a spatial and functional level in accordance with the connections observed in the real world.

Note 3.— An application schema applicable to aerodrome mapping data feature definitions may be found in RTCA Document DO-291B and EUROCAE Document ED-119B — Interchange Standards for Terrain, Obstacle, and Aerodrome Mapping Data. This application schema contains a feature catalogue which specifies the feature types and associated attributes.

Editorial Note.— 5.3.4.1 and Notes 1, 2 and 3 are relocated text from 11.3.2 and Notes 1, 2 and 3.

~~5.3.4.2 A predetermined distribution system for NOTAM transmitted on the AFS in accordance with Appendix 5 shall be used whenever possible, subject to the requirements of 5.3.4.~~

Editorial Note.— 5.3.4.2 is relocated to the new PANS-AIM, 5.4.2.4.

5.3.4.2 New text

5.3.5 Instrument flight procedure data sets

5.3.5.1 New text

5.3.5.2 New text

5.4 Distribution services

5.4.1 General

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

Editorial Note.— 5.4.1.1 is relocated text from 5.3.1.

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

Editorial Note.— 5.4.1.2 is relocated text from 4.5.

5.4.1.3 New text

5.4.2 NOTAM distribution

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

Editorial Note.— 5.4.2.1 is relocated text from 5.3.1

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

Editorial Note.— 5.4.2.2 is relocated text from 5.3.2.

5.4.2.3 The AFS shall, whenever practicable, be employed for NOTAM distribution.

Editorial Note.— 5.4.2.3 is relocated text from 5.3.2.1.

5.4.2.4 When a NOTAM exchanged as specified in 5.3.4 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.

Editorial Note.— 5.4.2.4 is relocated text from 5.3.2.2 and 5.3.3.

5.4.2.5 International exchange of NOTAM shall take place only as mutually agreed between the international NOTAM offices concerned.

Editorial Note.— 5.4.2.5 is relocated text from 5.3.4.

5.4.2.6 New text

5.4.2.7 Recommendation.— Selective distribution lists should be used when practicable.

Note.— These lists are intended to obviate superfluous distribution of information. Guidance material relating to this is contained in the Aeronautical Information Services Manual (Doc 8126).

Editorial Note.— 5.4.2.7 is relocated text from 5.3.3.1.

5.5 Pre-Flight Information Service

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

Editorial Note.— 5.5.1 is relocated text from 8.1.1.

5.5.2 Aeronautical information provided for pre-flight planning purposes at the aerodromes/heliports referred to in 8.1.1 shall include relevant:

- a) elements of the Integrated Aeronautical Information Package;
- b) maps and charts.

Note 1.— The documentation listed in a) and b) may be limited to national publications and when practicable, those of immediately adjacent States, provided a complete library of aeronautical information is available at a central location and means of direct communications are available between the aerodrome AIS unit and that library.

Editorial Note.— 5.5.2 is relocated text from 8.1.2.

Note 2.— A recapitulation of valid NOTAM of operational significance and other information of urgent character shall be made available to flight crews in the form of plain-language pre-flight information bulletins (PIB). Note.— Guidance on the preparation of PIB is contained in the Aeronautical Information Services Manual (Doc 8126).

Editorial Note.— Note 2 to 5.5.2 is relocated text from 8.1.3.

5.6 Post-flight information Service

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

Editorial Note.— 5.6.1 is relocated text from 8.3.1.

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

Editorial Note.— 5.6.2 is relocated text from 8.3.1.

5.6.3 Arrangements shall be made to receive at aerodromes/heliports information concerning the presence of birds observed by aircrews and shall ensure that such information is made available to the aeronautical information service for such distribution as the circumstances necessitate.

Editorial Note.— 5.6.3 is relocated text from 8.3.2.

5.6.4 Arrangements shall be made to receive at aerodromes/heliports information concerning the presence of birds observed by aircrews and shall ensure that such information is made available to the aeronautical information service for such distribution as the circumstances necessitate.

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

Editorial Note.— 5.6.4 is relocated text from 8.3.2.

CHAPTER 6. AERONAUTICAL INFORMATION UPDATES

6.1 General specifications

~~6.1.1 Information concerning the circumstances listed in Appendix 4, Part 1, shall be distributed under the regulated system (AIRAC), i.e. basing establishment, withdrawal or significant changes upon a series of common effective dates at intervals of 28 days, including 14 January 2010. The information notified therein 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.~~

Editorial Note.— 6.1.1 is relocated to the new edition of Annex 15, 6.2.1.

~~Note.~~— ~~Guidance material on the procedures applicable to the AIRAC system is contained in the Aeronautical Information Services Manual (Doc 8126).~~

Editorial Note.— Note to 6.1.1 is relocated to the new edition of Annex 15, 6.2.1.

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

Editorial Note.— 6.1.1 is retained text from 4.2.9 partially.

~~6.1.2 Recommendation. The regulated system (AIRAC) should also be used for the provision of information relating to the establishment and withdrawal of, and premeditated significant changes in, the circumstances listed in Appendix 4, Part 2.~~

Editorial Note.— 6.1.2 is relocated to the new edition of Annex 15, 6.2.6.

~~6.1.3 When information has not been submitted by the AIRAC date, a NIL notification shall be originated and distributed by NOTAM or other suitable means, not later than one cycle before the AIRAC effective date concerned.~~

Editorial Note.— 6.1.3 is relocated to the new edition of Annex 15, 6.2.4.

~~6.1.4 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.~~

Editorial Note.— 6.1.4 is relocated to the new edition of Annex 15, 6.2.5.

~~6.1.5 Recommendation. The use of the date in the AIRAC cycle which occurs between 21 December and 17 January inclusive should be avoided as an effective date for the introduction of significant changes under the AIRAC system.~~

Editorial Note.— 6.1.5 is relocated to the new edition of Annex 15, 6.2.6.

6.2 Aeronautical Information Regulation and Control (AIRAC)

~~6.2.1 Information provided under the AIRAC system in paper copy form shall be distributed by the AIS unit at least 42 days in advance of the effective date with the objective of reaching recipients at least 28 days in advance of the effective date.~~

Editorial Note.— 6.2.1 is relocated to new edition of Annex 15, 6.2.3 and Note.

6.2.1 Information concerning the circumstances listed in Appendix 4, Part 1, shall be distributed under the regulated system (AIRAC), i.e. basing establishment, withdrawal or significant changes upon a series of common effective dates at intervals of 28 days, including 14 January 2010. The information notified therein 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.

Note.— Guidance material on the procedures applicable to the AIRAC system is contained in the Aeronautical Information Services Manual (Doc 8126).

Editorial Note.— 6.2.1 is relocated text from 6.1.1.

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

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

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

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

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

1.4 Transition levels, transition altitudes and minimum sector altitudes.

1.5 Meteorological facilities (including broadcasts) and procedures.

1.6 Runways and stopways.

1.7 Taxiways and aprons.

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

1.9 Approach and runway lighting.

1.10 Aerodrome operating minima if published by a State.

Editorial Note.— 6.2.1 subparagraphs are retained text from Appendix 4, Part 1.

~~6.2.2 **Recommendation.**— Whenever major changes are planned and where advance notice is desirable and practicable, information provided in paper copy form should be distributed by the AIS unit 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 in Appendix 4, Part 3, and other major changes if deemed necessary.~~

~~Note.— Guidance material on what constitutes a major change is included in Doc 8126.~~

Editorial Note.— 6.2.2 and Note are relocated to the new edition of Annex 15, 6.2.7.

6.2.2 The information notified therein 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.

Editorial Note.— 6.2.2 is relocated text from 6.1.1.

6.2.3 Information provided under the AIRAC system in paper copy form shall be distributed by the AIS unit at least 42 days in advance of the effective date with the objective of reaching recipients at least 28 days in advance of the effective date.

Note.— Information provided under the AIRAC system in paper copy form shall be distributed by the AIS unit at least 42 days in advance of the effective date with the objective of reaching recipients at least 28 days in advance of the effective date.

Editorial Note.— 6.2.3 and Note is relocated text from 6.2.1.

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

Editorial Note.— 6.2.4 is relocated text from 6.1.3.

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

Editorial Note.— 6.2.5 is relocated text from 6.1.4.

6.2.6 **Recommendation.**— The use of the date in the AIRAC cycle which occurs between 21 December and 17 January inclusive should be avoided as an effective date for the introduction of significant changes under the AIRAC system. The regulated system (AIRAC) should also be used for the provision of information relating to the establishment and withdrawal of, and premeditated significant changes in, the circumstances listed in Appendix 4, Part 2.

2. The establishment and withdrawal of, and premeditated significant changes to:

2.1 Position, height and lighting of navigational obstacles.

2.2 Hours of service of aerodromes, facilities and services.

2.3 Customs, immigration and health services.

2.4 Temporary danger, prohibited and restricted areas and navigational hazards, military exercises and mass movements of aircraft.

2.5 Temporary areas or routes or portions thereof where the possibility of interception exists.

Editorial Note.— 6.2.6 is retained text from 6.1.2, 6.1.5 and Appendix 4, Part 2.

6.2.7 **Recommendation.**— *Whenever major changes are planned and where advance notice is desirable and practicable, information provided in paper copy form should be distributed by the AIS unit 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 in Appendix 4, Part 3, and other major changes if deemed necessary.*

Editorial Note.— 6.2.7 is relocated text from 6.2.2.

3. The establishment of, and premeditated major changes to:

3.1 New aerodromes for international IFR operations.

3.2 New runways for IFR operations at international aerodromes.

3.3 Design and structure of the air traffic services route network.

3.4 Design and structure of a set of terminal procedures (including change of procedure bearings due to magnetic variation change).

3.5 Circumstances listed in Part 1 if the entire State or any significant portion thereof is affected or if cross-border coordination is required.

Editorial Note.— 6.2.7 subparagraphs are retained text from Appendix 4, Part 3.

Note.— *Guidance on what constitutes a major change is included in Doc 8126.*

Editorial Note.— *Note to 6.2.7 is retained text from 6.2.2.*

6.3 Aeronautical Information Product updates

~~6.3.1 States that have established an aeronautical database shall, when updating its contents concerning the circumstances listed in Appendix 4, Part 1, ensure that the effective dates of data coincide with the established AIRAC effective dates.~~

Editorial Note.— 6.3.1 is deleted and the rationale is provided in Attachment D, IP 13.

6.3.1 AIP updates

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

Editorial Note.— 6.3.1.1 is relocated text from 4.2.9 partially.

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

Editorial Note.— 6.3.1.2 is relocated text from 4.3.1.

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

Editorial Note.— 6.3.1.3 is relocated text from 4.4.1.

~~6.3.2 Information provided as electronic media, concerning the circumstances listed in Appendix 4, Part 1, shall be distributed/made available by the AIS unit so as to reach recipients at least 28 days in advance of the AIRAC effective date.~~

Editorial Note.— 6.3.2 is deleted and the rationale is provided in Attachment D, IP 25.

6.3.2 NOTAM

6.3.2.1 When an AIP Amendment or an AIP Supplement is published in accordance with AIRAC procedures, a NOTAM shall be originated giving a brief description of the contents, the effective date and time, and the reference number of the amendment or supplement. This NOTAM shall come into force on the same effective date and time as the amendment or supplement and shall remain valid in the pre-flight information bulletin for a period of fourteen days.

Note.— Guidance material for the origination of NOTAM announcing the existence of AIRAC AIP Amendments or AIP Supplements (“Trigger NOTAM”) is contained in the Aeronautical Information Services Manual (Doc 8126).

Editorial Note.— 6.3.2.1 is relocated text from 5.1.1.6.

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

Note 1.— Operationally significant changes concerning circumstances listed in Appendix 4, Part 1, are issued under the Aeronautical Information Regulation and Control (AIRAC) system specified in Chapter 6.

Note 2.— Information of short duration containing extensive text and/or graphics is published as an AIP Supplement (see Chapter 4, 4.4).

Editorial Note.— 6.3.2.2 is relocated text from 5.1.1.

6.3.2.3 A NOTAM shall be originated and issued concerning the following information:

- a) establishment, closure or significant changes in operation of aerodrome(s)/heliport(s) or runways;
- b) establishment, withdrawal and significant changes in operation of aeronautical services (AGA, AIS, ATS, CNS, MET, SAR, etc.);
- c) establishment, withdrawal and significant changes in operational capability of radio navigation and air-ground communication services. This includes: interruption or return to operation, change of frequencies, change in notified hours of service, change of identification, change of orientation (directional aids), change of location, power increase or decrease amounting to 50 per cent or more, change in broadcast schedules or contents, or irregularity or unreliability of operation of any radio navigation and air-ground communication services;
- d) establishment, withdrawal or significant changes made to visual aids;
- e) interruption of or return to operation of major components of aerodrome lighting systems;
- f) establishment, withdrawal or significant changes made to procedures for air navigation services;
- g) occurrence or correction of major defects or impediments in the manoeuvring area;
- h) changes to and limitations on availability of fuel, oil and oxygen;
- i) major changes to search and rescue facilities and services available;
- j) establishment, withdrawal or return to operation of hazard beacons marking obstacles to air navigation;
- k) changes in regulations requiring immediate action, e.g. prohibited areas for SAR action;
- l) presence of hazards which affect air navigation (including obstacles, military exercises, displays, races and major parachuting events outside promulgated sites);
- m) erecting or removal of, or changes to, obstacles to air navigation in the take-off/climb, missed approach, approach areas and runway strip;
- n) establishment or discontinuance (including activation or deactivation) as applicable, or changes in the status of prohibited, restricted or danger areas;
- o) establishment or discontinuance of areas or routes or portions thereof where the possibility of interception exists and where the maintenance of guard on the VHF emergency frequency 121.5 MHz is required;
- p) allocation, cancellation or change of location indicators;
- q) significant changes in the level of protection normally available at an aerodrome/heliport for rescue and firefighting purposes. NOTAM shall be originated only when a change of category is involved and such change of category shall be clearly stated (see Annex 14, Volume I, Chapter 9, and Attachment A, Section 18);

- r) presence or removal of, or significant changes in, hazardous conditions due to snow, slush, ice, radioactive material, toxic chemicals, volcanic ash deposition or water on the movement area;
- s) outbreaks of epidemics necessitating changes in notified requirements for inoculations and quarantine measures;
- t) forecasts of solar cosmic radiation, where provided;
- u) an operationally significant change in volcanic activity, the location, date and time of volcanic eruptions and/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;
- v) release into the atmosphere of radioactive materials or toxic chemicals following a nuclear or chemical incident, the location, date and time of the incident, the flight levels and routes or portions thereof which could be affected and the direction of movement;
- w) establishment of operations of humanitarian relief missions, such as those undertaken under the auspices of the United Nations, together with procedures and/or limitations which affect air navigation; and
- x) implementation of short-term contingency measures in cases of disruption, or partial disruption, of air traffic services and related supporting services.

Note.— See Annex 11, 2.31 and Attachment C to that Annex.

Editorial Note.— 6.3.2.3 is relocated text from 5.1.1.1.

6.3.2.4 The following information shall not be notified by NOTAM:

- a) routine maintenance work on aprons and taxiways which does not affect the safe movement of aircraft;
- b) runway marking work, when aircraft operations can safely be conducted on other available runways, or the equipment used can be removed when necessary;
- c) temporary obstructions in the vicinity of aerodromes/heliports that do not affect the safe operation of aircraft;
- d) partial failure of aerodrome/heliport lighting facilities where such failure does not directly affect aircraft operations;
- e) partial temporary failure of air-ground communications when suitable alternative frequencies are known to be available and are operative;
- f) the lack of apron marshalling services and road traffic control;
- g) the unserviceability of location, destination or other instruction signs on the aerodrome movement area;
- h) parachuting when in uncontrolled airspace under VFR (see 5.1.1.1 I)), when controlled, at promulgated sites or within danger or prohibited areas;
- i) other information of a similar temporary nature.

Note.— New text

Editorial Note.— 6.3.2.4 is relocated text from 5.1.1.3.

~~6.3.3 **Recommendation.**— Whenever major changes are planned and where advance notice is desirable and practicable, information provided as electronic media should be distributed/made available 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 in Appendix 4, Part 3, and other major changes if deemed necessary.~~

~~Note.— Guidance material on what constitutes a major change is included in Doc 8126.~~

Editorial Note.— 6.3.3 and the Note are relocated to the new edition of Annex 15, 6.2.7

6.3.3 Data set updates

6.3.3.1 New text

6.3.3.2 New text

6.3.3.3 **Recommendation.**— New text

6.3.3.4 **Recommendation.**— New text

6.3.3.5 New text

Origin	Rationale
AIS-AIMSG	While it was understood that the process of incorporating the AIM focus into Annex 15 is part of an evolutionary transition of traditional AIS to AIM, it was nevertheless recognized that this would involve more than a modification of existing provisions or extensions to the current document. Some of the issues to be addressed were categorized as “the big questions” which include the definition of the scope of AIM, the role of AIM, the functions of AIM, the products and services of AIM, the aeronautical information updates (including the AIRAC cycle). To properly answer these questions, the need to restructure Annex 15 was acknowledged. The principle focus has been the re-development of Chapters 4 to 11 and the restructuring of the existing SARPs into three new chapters: Chapter 4 — <i>Scope of Aeronautical Data and Information</i>, Chapter 5 — <i>Information Products and Services</i>, Chapter 6 — <i>Aeronautical Information Updates</i>. In the proposed structure of Annex 15, the principle focus of Chapter 4 is information and data to be collected from “originators”. This is in contrast to Chapter 5 where the focus is the identification of the information products and services required by users. This approach allows the data collection activity to be decoupled from the definition of the end-products and facilitates the transition to a full AIM environment. Chapter 6 covers

	the AIRAC and temporality issues. Additionally, the 37th Assembly established that the provisions contained in the Annexes become more performance-oriented while the more technical specifications, to the extent that they are needed, would be found in other documents. Consequently, Annex 15 has been restructured to include only high-level specifications; selected parts concerning procedures, processes and protocols have been moved to the new PANS-AIM document, as appropriate.

ATTACHMENT D to State letter AN 2/2.1.1-17/22

PROPOSED AMENDMENT TO ANNEX 15

NOTES ON THE PRESENTATION OF THE AMENDMENT

The text of the amendment is arranged to show deleted text with a line through it and new text highlighted with grey shading, as shown below:

~~Text to be deleted is shown with a line through it.~~

Text to be deleted

New text to be inserted is highlighted with grey shading.

New text to be inserted

~~Text to be deleted is shown with a line through it~~ followed by the
replacement text which is highlighted with grey shading.

New text to replace
existing text

TEXT OF PROPOSED AMENDMENT TO

**INTERNATIONAL STANDARDS
AND RECOMMENDED PRACTICES**

AERONAUTICAL INFORMATION SERVICES

**ANNEX 15
TO THE CONVENTION ON INTERNATIONAL CIVIL AVIATION**

INITIAL PROPOSAL 1 related to PANS-AIM creation

CHAPTER 1. GENERAL

...

Note 3.— These Standards and Recommended Practices are to be used in conjunction with the Procedures for Air Navigation Services — Aeronautical Information Management (PANS-AIM, Doc 10066).

Note 34.— Guidance material on the organization and operation of aeronautical information services is contained in the Aeronautical Information Services Manual (Doc 8126).

...

<i>Origin</i>	Rationale - PANS-AIM creation
AIS-AIMSG	Procedures for Air Navigation Services (PANS) contain for the most part operating procedures regarded as not yet having attained a sufficient degree of maturity for adoption as SARPs, as well as material of a more permanent character which is considered too detailed for incorporation in an Annex, or is susceptible to frequent amendment, for which the processes of the Convention would be too cumbersome. It has been acknowledged that many of the existing specifications in Annex 15 are too detailed and would be much more appropriate to be incorporated into a PANS document. At the same time, while many specifications in Doc 8126 are too specific to be incorporated into Annex 15, their promulgation in a guidance document may not be conducive to reaching a higher level of harmonization. The specifications published as PANS will provide a means for increased harmonization within the domain of AIS/AIM, become a reference to enable the delivery of uniform aeronautical information services in future AIM environments, as well as provide a vehicle for the emerging technical requirements of AIM.

INITIAL PROPOSAL 2
related to Data Quality Requirements

CHAPTER 1. GENERAL

1.1 Definitions

When the following terms are used in the Standards and Recommended Practices for aeronautical information services, they have the following meanings:

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

Note.— For measured positional data the accuracy is normally expressed in terms of a distance from a stated position within which there is a defined confidence of the true position falling.

...

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

...

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

...

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

...

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

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

...

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

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

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Editorial Note.— Re-arrange changes in alphabetical order.

CHAPTER 3. AERONAUTICAL INFORMATION MANAGEMENT

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3.2 Data quality specifications

3.2.1 Data Accuracy

The order of accuracy for aeronautical data shall be in accordance with its intended use as specified in Annex 11, Chapter 2, and Annex 14, Volumes I and II, Chapter 2. In that respect, three types of positional data shall be identified: surveyed points (runway thresholds, navigation aid positions, etc.), calculated points (mathematical calculations from the known surveyed points of points in space/fixes) and declared points (e.g. flight information region boundary points).

3.2.2 Data Resolution

The order of publication resolution of aeronautical data shall be as specified in Appendix 7 commensurate with the actual data accuracy.

...

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

3.2.3 Data Integrity

3.2.3.1 The integrity of classification for aeronautical data shall be maintained throughout the data process from origination to distribution to the next intended user as specified in Tables A7-1 to A7-5 of Appendix 7.

...

3.2.3.2 The integrity of aeronautical data shall be maintained throughout the data process from survey/origin to distribution to the next intended user (the entity that receives the aeronautical information from the AIS provider). Based on the applicable integrity classification, the validation and verification procedures shall be put in place in order to:

- a) for routine data: avoid corruption throughout the processing of the data;
- b) for essential data: assure corruption does not occur at any stage of the entire process and include additional processes as needed to address potential risks in the overall system architecture to further assure data integrity at this level; and
- c) for critical data: assure corruption does not occur at any stage of the entire process and include additional integrity assurance processes to fully mitigate the effects of faults identified by thorough analysis of the overall system architecture as potential data integrity risks.

3.2.4 Data Traceability

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

3.2.5 Data Timeliness

3.2.5.1 Timeliness shall be ensured by including limits on the effective period of the data elements.

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

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

3.2.6 Data Completeness

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

3.2.7 Data Format

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

3.3 Aeronautical data and aeronautical information validation and verification

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3.3.2 An AIS shall establish verification and validation procedures which ensure that upon receipt of aeronautical data and aeronautical information, quality requirements (~~accuracy, resolution, integrity and traceability~~) are met.

~~*Note 1.— Guidance material on liaison with other related services is contained in the Aeronautical Information Services Manual (Doc 8126).*~~

...

3.5 Use of automation

3.5.1 Automation shall be ~~introduced~~ applied with the objective of improving in order to ensure the timeliness, quality, efficiency and cost-effectiveness of aeronautical information services.

Note.— Guidance material on the development of databases and the establishment of data exchange services is contained in the Aeronautical Information Services Manual (Doc 8126).

...

<i>Origin</i> AIS-AIMSG	Rationale for Data Quality Requirements Annex 15 defines data quality as “a degree or level of confidence that the data provided meet the requirements of the data user in terms of accuracy, resolution and integrity”. The Industry Standards (EUROCAE ED76A/RTCA DO200B) defines data quality as “a degree or level of confidence that the data provided meet the requirements of the user. These requirements include levels of accuracy, resolution, assurance level, traceability, timeliness, completeness, and format”. The current Annex 15 includes only three characteristics of the data quality, while the Industry standards require seven characteristics. Additionally, whilst Annex 15 applies to the aeronautical data chain from origination to the State AIS publication, the Industry Standards applies to the entire data chain from origination to the distribution to the next intended user. The proposed amendment tries to solve these inconsistencies by updating the data quality definition, adding four additional definitions of the data quality characteristics and changing the provisions to include the new quality characteristics. In this way the proposed amendment aligns Annex 15 with the industry Standards and satisfies the need for ICAO provisions to be applicable to the data processing as a whole.

INITIAL PROPOSAL 3
related to the introduction of a data catalogue

CHAPTER 3. AERONAUTICAL INFORMATION MANAGEMENT

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3.2 Data quality specifications

3.2.1 Data Accuracy

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Note.— The accuracy requirements for electronic terrain and obstacle data are specified in Appendix 8. Specifications concerning the order of accuracy (including confidence level) for aeronautical data are contained in the PANS-AIM (Doc 10066), Appendix 1.

3.2.2 Data Resolution

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

...

3.2.3 Data Integrity

...

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

...

CHAPTER 5. AERONAUTICAL INFORMATION PRODUCTS AND SERVICES

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5.2 Aeronautical information in a standardized presentation

5.2.5 Aeronautical Charts

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~~5.2.5.5 The order of publication resolution of geographical coordinates shall be that specified in Table A7-1 of Appendix 7 while the order of chart resolution of geographical coordinates shall be that specified in Annex 4, Appendix 6, Table 1. The order of chart resolution of aeronautical data shall be that as specified for a particular chart.~~

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

~~5.2.5.6 The order of publication resolution of elevation and geoid undulation shall be that specified in Table A7-2 of Appendix 7 while the order of chart resolution of elevation and geoid undulation shall be that specified in Annex 4, Appendix 6, Table 2.~~

<i>Origin</i>	Rationale — Introduction of a data catalogue
AIS-AIMSG	The move from the current product-centric to a data-centric environment, as proposed in the amendment to Annex 15 and the new PANS-AIM, will require the definition of the data and information scope for all data collected by the aeronautical information service. The objective of the data catalogue is to provide a general description of

	the AIM data scope and to consolidate all data and information that can be collected and maintained by the aeronautical information service. The data catalogue also represents a common language that facilitates the establishment of formal arrangements between data originators and the aeronautical information service. The data catalogue is the single source of all data quality requirements. The AIS-AIM SG considered that moving all data quality requirements from Annex 4, Appendix 6, Annex 11, Appendix 5, Annex 14 Vol. I, Appendix 5, Annex 14 Vol. II, Appendix 1 and Annex 15, Appendices 7 and 8 to the PANS-AIM and consolidating them in a single place in the data catalogue would be beneficial in providing a central point of reference and making it easier to spot discrepancies. Additionally, it was considered easier for long-term maintenance when requirements change to ensure that changes are consistent, such as, for example, between resolution and accuracy. It should be noted that the construction of Appendix 1 of PANS-AIM has not brought about any changes to the Data Quality Requirements. The information in the data catalogue will allow the verification of correctness of received data at the aeronautical information service and at next intended user and support further electronic processing without any future human intervention.

INITIAL PROPOSAL 4
related to split of data origination requirements from data publication requirements

CHAPTER 2. RESPONSIBILITIES AND FUNCTIONS

2.1 State responsibilities

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2.1.5 Each Contracting State 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.

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

CHAPTER 4. SCOPE OF AERONAUTICAL DATA AND AERONAUTICAL INFORMATION

Note 1.— The scope of aeronautical data and aeronautical information that is managed by an AIS is described in this chapter.

Note 2.— The scope of aeronautical data and aeronautical information provides the minimum requirement to support Aeronautical Information Products and services, aeronautical navigation data bases, air navigation applications and ATM systems.

4.1 Scope of aeronautical data and aeronautical information

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

- a) national regulations, rules and procedures;
- b) aerodromes and heliports;
- c) airspace;
- d) ATS routes;
- e) instrument flight procedures;
- f) radio navigation aids/systems;
- g) obstacles; and

h) geographic information.

Note 1.— Detailed specifications concerning the content of each sub-domain are contained in the PANS-AIM (Doc 10066), Appendix 1.

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

4.1.2 Determination and reporting of aeronautical data shall be in accordance with the accuracy and integrity classification required to meet the needs of the end-user of aeronautical data.

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

4.2 Metadata

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

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

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

<i>Origin</i> AIS-AIMSG	Rationale — Split of data origination requirements from data publication requirements The transition from the current product centric environment to a data centric environment requires a scope of the data, information and associated metadata to be collected by an Aeronautical Information Service (AIS). The minimum set of data and information is determined to support Aeronautical Information Products and services and describe the AIS infrastructure and its development under the stewardship of the AIM domain. The scope of aeronautical data, information and associated metadata is described in proposed Chapter 4. This is in contrast to the proposed Chapter 5 where the focus is to identify the information products and services requested by users. This approach allows the data collection activity to be decoupled from the definition of the end-products. The end-user applications, which make use of the information transferred in the form of data sets, do not rely exclusively on the structure and format of the messages but are free to manage the data and combine it with other data to construct the final view appropriate for their need.

INITIAL PROPOSAL 5 related to digital datasets

CHAPTER 1. GENERAL

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1.3 Miscellaneous specifications

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

...

CHAPTER 2. RESPONSIBILITIES AND FUNCTIONS

2.1 State responsibilities

...

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

...

2.3 Exchange of aeronautical data and aeronautical information

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2.3.8 Where aeronautical information and aeronautical data is provided in the form of digital data sets to be used by the AIS, it shall be provided on the basis of agreement between the Contracting States concerned.

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

...

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

Note 1.— Specifications concerning the globally interoperable aeronautical information and data exchange models are contained in the PANS-AIM (Doc 10066).

Note 2.— Guidance on the globally interoperable aeronautical information and data exchange models may be found in Doc 8126.

2.4 Copyright

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

CHAPTER 5. AERONAUTICAL INFORMATION PRODUCTS AND SERVICES

...

5.3 Digital data sets

5.3.1 General

5.3.1.1 When provided, digital data shall be in the form of the following data sets:

- a) AIP data set;
- b) terrain data sets;
- c) obstacle data sets;
- d) aerodrome mapping data sets; and
- e) instrument flight procedure data sets.

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

5.3.1.2 Each data set shall be provided to the next intended user together with a minimum set of metadata that ensures data traceability from the end-user to the originator.

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

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

5.3.2 AIP data set

5.3.2.1 **Recommendation.**— *An AIP data set should be provided covering the extent of information as provided in the AIP.*

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

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

5.3.3 Terrain and obstacle data sets

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

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

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

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

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

— Area 2c: an area extending outside Area 2a and Area 2b at a distance of not more than 10 km from the boundary of Area 2a; and

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

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

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

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

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

5.3.3.3 Terrain data sets

5.3.3.3.1 ~~A—~~**Terrain data sets** shall contain ~~digital sets of data representing the digital representation of the~~ terrain surface in the form of continuous elevation values at all intersections (points)

of a defined grid, referenced to common datum. ~~A terrain grid shall be angular or linear and shall be of regular or irregular shape.~~

5.3.3.3.2 ~~Electronic~~ Terrain data shall be provided for Area 1. ~~The obstacle data shall be provided for obstacles in Area 1 higher than 100 m above ground.~~

5.3.3.3.3 ~~At For~~ aerodromes regularly used by international civil aviation, ~~electronic~~ terrain data shall be provided for:

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

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

- a) ~~Within in the area covered by a~~ extending to 10 km from the ARP, ~~terrain data shall comply with the Area 2 numerical requirements;~~ and
- b) ~~In within the area between 10 km and the TMA boundary or 45-km radius (whichever is smaller) data on where terrain that penetrates the a horizontal plane terrain data collection surface specified as 120 m above the lowest runway elevation shall comply with the Area 2 numerical requirements.~~

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

5.3.3.3.6 Recommendation.— ~~At For~~ those aerodromes located near territorial boundaries, arrangements should be made among States concerned to share Area 2 ~~electronic~~ terrain and obstacle data.

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

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

5.3.3.3.9 Recommendation.— Where additional ~~electronic~~ obstacle or terrain data ~~are is~~ collected to meet other aeronautical requirements, the ~~obstacle and~~ terrain data sets should be expanded to include ~~these this~~ additional data.

5.3.3.4 Obstacle data sets

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

5.3.3.4.2 Obstacles data shall not be included in terrain data sets. ~~Obstacle data elements are features that shall be represented in the data sets by points, lines or polygons.~~

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

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

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

- a) Area 2a for those obstacles that penetrate ~~the relevant~~ an obstacle data collection surface ~~specified in Appendix 8~~ outlined by a rectangular area around a runway that comprises the runway strip plus any clearway that exists. The Area 2a obstacle collection surface shall have height of 3 m above the nearest runway elevation measured along the runway centre line, and for those portions related to a clearway, if one exists, at the elevation of the nearest runway end;
- b) objects in the take-off flight path area which project above a plane surface having a 1.2 per cent slope and having a common origin with the take-off flight path area; and
- c) penetrations of the aerodrome obstacle limitation surfaces.

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

5.3.3.4.6 **Recommendation.**— ~~At For~~ aerodromes regularly used by international civil aviation, ~~electronic terrain and~~ obstacle data should be provided for Areas 2b, 2c and 2d for obstacles ~~and terrain~~ that penetrate the relevant ~~terrain and~~ obstacle data collection surface specified as follows: ~~in Appendix 8,~~

- a) Area 2b: an area extending from the ends of Area 2a in the direction of departure, with a length of 10 km and a splay of 15% to each side. The Area 2b obstacle collection surface has a 1.2% slope extending from the ends of Area 2a at the elevation of the runway end in the direction of departure, with a length of 10 km and a splay of 15% to each side;
- b) Area 2c: an area extending outside Area 2a and Area 2b at a distance of not more than 10 km from the boundary of Area 2a. The Area 2c obstacle collection surface has a 1.2% slope extending outside Area 2a and Area 2b at a distance of not more than 10 km from the boundary of Area 2a. The initial elevation of Area 2c shall be the elevation of the point of Area 2a at which it commences; and
- c) Area 2d: an area outside the Areas 2a, 2b and 2c up to a distance of 45 km from the aerodrome reference point, or to an existing TMA boundary, whichever is nearest. The Area 2d obstacle collection surface has a height of 100 m above ground;

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

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

5.3.3.4.8 Recommendation.— ~~At For~~ those aerodromes located near territorial boundaries, arrangements should be made among States concerned to share ~~Area 2 electronic terrain and obstacle data.~~

5.3.3.4.9 Recommendation.— ~~At For~~ aerodromes regularly used by international civil aviation, ~~electronic terrain and obstacle data should be provided for Area 3 for terrain and obstacles that penetrate the relevant obstacle data collection surface specified in Appendix 8, Figure A8-3. The data collection surface for terrain and obstacles extends~~ extending a half-metre (0.5 m) above the horizontal plane passing through the nearest point on the aerodrome movement area.

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

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

5.3.4 Aerodrome mapping data sets

5.3.4.1 Aerodrome mapping data sets shall contain the digital representation of aerodrome mapping data consisting of aerodrome features.

Note 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.

Note 2.— ~~Aerodrome mapping data feature definitions, constraints and rules applicable to aerodrome mapping data are contained in RTCA Document DO-272C and EUROCAE Document ED-99C—User Requirements for Aerodrome Mapping Information. These constraints ensure the connectivity between features on a spatial and functional level in accordance with the connections observed in the real world.~~

Note 3.— ~~An application schema applicable to aerodrome mapping data feature definitions may be found in RTCA Document DO-291B and EUROCAE Document ED-119B—Interchange Standards for Terrain, Obstacle, and Aerodrome Mapping Data. This application schema contains a feature catalogue which specifies the feature types and associated attributes.~~

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

5.3.5 Instrument flight procedure data sets

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

5.3.5.2 **Recommendation.**— *Instrument flight procedures data sets should be made available for aerodromes regularly used by international civil aviation.*

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CHAPTER 6. AERONAUTICAL INFORMATION UPDATES

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6.3.3 Data set updates

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

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

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

6.3.3.4 **Recommendation.**— *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.*

6.3.3.5 Updates to AIP, AIP data sets and Instrument Flight Procedures data sets shall be synchronised.

Origin	Rationale - Digital Datasets
AIS-AIMSG	The full move into the an automated data-centric environment requires the introduction of digital data sets. Providing the data in digital form and furthermore complying with digital data exchange requirements such as in the use of the Aeronautical Information Exchange Model (AIXM), represents a paradigm shift in the way information is handled along its life cycle. This is an important step forward in the implementation of AIM and System Wide Information Management (SWIM) since digital data is a base necessity for both concepts. Data sets, as new Aeronautical Information Products, represent a different way to provide the aeronautical information to users so that the management, processing, verification, usage and exchange can be done in a structured, automatic manner.

INITIAL PROPOSAL 6 related to Aeronautical Information Product

CHAPTER 1. GENERAL

1.1 Definitions

When the following terms are used in the Standards and Recommended Practices for aeronautical information services, they have the following meanings:

...

Aeronautical Information Product. Aeronautical data and aeronautical information provided either as digital data sets or as a standardized presentation in paper or electronic media. Aeronautical Information Products include:

- Aeronautical Information Publication (AIP), including Amendments and Supplements;
- Aeronautical Information Circulars (AIC);
- Aeronautical charts;
- NOTAM; and
- Digital data sets.

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

...

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

...

~~**AIS product.** Aeronautical data and aeronautical information provided in the form of the elements of the Integrated Aeronautical Information Package (except NOTAM and PIB), including aeronautical charts, or in the form of suitable electronic media.~~

...

~~**Integrated Aeronautical Information Package.** A package in paper, or electronic media which consists of the following elements:~~

- ~~— AIP, including amendment service;~~
- ~~— Supplements to the AIP;~~

~~—NOTAM and PIB;~~

~~—AIC; and~~

~~—checklists and lists of valid NOTAM.~~

...

1.3 Miscellaneous specifications

1.3.1 ~~Each element of the Integrated Aeronautical Information Package for~~ Aeronautical Information Products intended for international distribution shall include English text for those parts expressed in plain language.

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CHAPTER 2. RESPONSIBILITIES AND FUNCTIONS

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2.2 AIS responsibilities and functions

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2.2.2 An AIS shall receive, collate or assemble, edit, format, publish/store and distribute aeronautical data and aeronautical information concerning the entire territory of the State as well as those areas over the high seas in which the State is responsible for the provision of air traffic services. Aeronautical data and aeronautical information shall be provided as ~~an Integrated Aeronautical Information Package~~ Aeronautical Information Products.

...

2.3 Exchange of aeronautical data and aeronautical information

2.3.1 Each Contracting State shall designate the office to which all elements of the ~~Integrated Aeronautical Information Package originated~~ Aeronautical Information Products provided by other States shall be addressed. Such an office shall be qualified to deal with requests for aeronautical data and aeronautical information ~~originated~~ provided by other States.

...

2.3.6 ~~Except as provided in 2.3.8, One copy of each of the elements of the Integrated Aeronautical Information Package~~ following Aeronautical Information Products (where available) that have been requested by the AIS of a Contracting State shall be made available by the originating State and provided in the mutually-agreed form(s), without charge, even where authority for publication/storage and distribution has been delegated to a non-governmental agency-;

- a) Aeronautical Information Publication (AIP), including Amendments and Supplements;
- b) Aeronautical Information Circulars (AIC); and

c) NOTAM.

2.3.7 Recommendation.— *The exchange of more than one copy of the elements of the ~~Integrated Aeronautical Information Package~~ Aeronautical Information Products and other air navigation documents, including those containing air navigation legislation and regulations, should be subject to bilateral agreement between the participating Contracting States and entities.*

...

2.3.9 Recommendation.— *The procurement of aeronautical data and aeronautical information, including the elements of the ~~Integrated Aeronautical Information Package~~ 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 should be subject to separate agreement with the originating State between the participating States and entities.*

2.4 Copyright

Note.— *In order to protect the investment in the products of a State's AIS as well as to ensure better control of their use, States may wish to apply copyright to those products in accordance with their national laws.*

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

...

2.5 Cost recovery

2.5.1 Recommendation.— *The overhead cost of collecting and compiling aeronautical data and aeronautical information should 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).*

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

CHAPTER 3. AERONAUTICAL INFORMATION MANAGEMENT

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3.3 Aeronautical data and aeronautical information validation and verification

3.3.1 Material to be issued as part of the ~~Integrated Aeronautical Information Package~~ ~~an Aeronautical Information Product~~ shall be thoroughly checked before it is submitted to the AIS, in order to ~~make certain~~ ~~ensure~~ that all necessary information has been included and that it is correct in detail ~~prior to distribution~~.

...

CHAPTER 5. AERONAUTICAL INFORMATION PRODUCTS AND SERVICES

5.1 General

5.1.1 Aeronautical information shall be provided in the form of Aeronautical Information Products and associated services.

Note.— Specifications concerning the order of resolution of aeronautical data provided for each Aeronautical Information Product are contained in the PANS-AIM (Doc 10066), Appendix 1.

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5.2.5 Aeronautical Charts

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5.2.5.1 The aeronautical charts listed alphabetically below shall, when available for designated international aerodromes/heliports, form part of the AIP, or be ~~distributed~~ ~~provided~~ separately to recipients of the AIP:

- a) Aerodrome/Heliport Chart — ICAO;
- b) Aerodrome Ground Movement Chart — ICAO;
- c) Aerodrome Obstacle Chart — ICAO Type A;
- d) Aerodrome Terrain and Obstacle Chart — ICAO (Electronic);
- e) Aircraft Parking/Docking Chart — ICAO;
- f) Area Chart — ICAO;
- g) ATC Surveillance Minimum Altitude Chart — ICAO;
- h) Instrument Approach Chart — ICAO;
- i) Precision Approach Terrain Chart — ICAO;
- j) Standard Arrival Chart — Instrument (STAR) — ICAO;
- k) Standard Departure Chart — Instrument (SID) — ICAO;
- l) Visual Approach Chart — ICAO.

Note.— A page pocket may be used in the AIP to include the Aerodrome Terrain and Obstacle Chart — ICAO (Electronic) on appropriate electronic media.

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

5.2.5.3 The aeronautical charts listed alphabetically below shall, when available, be provided as Aeronautical Information Products:

- a) Aerodrome Obstacle Chart — ICAO Type B;
- b) World Aeronautical Chart — ICAO 1:1 000 000;
- c) Aeronautical Chart — ICAO 1:500 000;
- d) Aeronautical Navigation Chart — ICAO Small Scale;
- e) Plotting Chart — ICAO chart; and
- f) ATC Surveillance Minimum Altitude Chart — ICAO.

...

5.4 Distribution services

5.4.1 General

5.4.1.1 ~~NOTAM~~ Aeronautical Information Products shall be distributed to those users ~~on the basis of a request~~ who request them.

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

5.4.1.3 **Recommendation.**— *Global communication networks and Web services should, whenever practicable, be employed for the provision of Aeronautical Information Products.*

Origin	Rationale - Aeronautical Information Product
AIS-AIMSG	Existing provisions allow for the co-existence of two terms, “Integrated Aeronautical Information Package” and “AIS product”, that are in contradiction with each other and create confusion. Additionally, the use of the term Integrated Aeronautical Information Package (IAIP) is considered to be not in line with the new AIM concepts. The term Aeronautical Information Product has been introduced to compile all AIS deliverables to be provided as either digital data sets or as a standardized presentation in paper or electronic media. The Aeronautical Information Product replaces the existing IAIP and AIS Product, resolves the inconsistencies and provides more clarity.

	Provisions have been updated accordingly to clearly identify which AIS deliverables are considered to be part of an Aeronautical Information Product, e.g. Aeronautical Charts to be provided as Aeronautical Information Products. It is also proposed to replace the term “published” with the term “provided”, as the word “published” is a word that is used most commonly for paper publications and not for electronic and digital data. With respect to provision of Aeronautical Information Products a Recommendation is introduced to recognize current and future communication capabilities and mechanisms (e.g. web services).

INITIAL PROPOSAL 7
related to paper vs electronic

CHAPTER 5 - AERONAUTICAL INFORMATION PRODUCTS AND SERVICES

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5.2 Aeronautical information in a standardised presentation

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

5.2.1.2 **Recommendation.**— *The AIP, AIP Amendment, AIP Supplement and AIC ~~should also be published in a format that allows for~~ provided as an electronic document (eAIP) should allow for both displaying on a computer screen electronic devices and printing on paper.*

...

5.2.5 Aeronautical Charts

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5.2.5.4 **Recommendation.**— *Electronic aeronautical charts should be provided based on digital databases and the use of geographic information systems.*

...

Origin	Rationale - Paper vs Electronic
AIS-AIMSG	In the process towards AIM, a smooth transition is achieved by promoting the electronic provision of Aeronautical Information Products. The transition to electronic media is needed in order to allow for automatic verification of correctness after reception by the next intended user and to minimise the necessity of human intervention when processing aeronautical data and information.

INITIAL PROPOSAL 8
related to AIP, AIP Supplements, AIC and Aeronautical Charts

CHAPTER 5 - AERONAUTICAL INFORMATION PRODUCTS AND SERVICES

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5.2 Aeronautical information in a standardised presentation

5.2.1 Aeronautical information provided in a standardized presentation shall include the AIP, AIP Amendments, AIP Supplements, AICs, NOTAMs and Aeronautical Charts.

Note 1.— Detailed specifications about AIP, AIP Amendments, AIP Supplements, AICs and NOTAMs are contained in the PANS-AIM (Doc 10066).

Note 2.— Cases where digital data sets may replace the corresponding elements of the standardized presentation are detailed in the PANS-AIM (Doc 10066).

...

5.2.2 Aeronautical Information Publication (AIP)

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

Note 2.— AIP constitute the basic information source for permanent information and long duration temporary changes.

5.2.2.1 AIP shall include ~~in Part 1 — General (GEN):~~

- 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 a State in each significant case where an alternative course of action is provided for in ICAO Standards, Recommended Practices and Procedures.

5.2.3 AIP Supplement

5.2.3.1 A checklist of valid AIP Supplements shall be ~~regularly provided issued at intervals of not more than one month. This information shall be issued through the medium of the monthly plain-language list of valid NOTAM required by 5.2.13.3.~~

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

...

5.2.4 Aeronautical Information Circulars (AIC)

5.2.4.1 An AIC shall be ~~originated whenever it is desirable to promulgate~~ used to provide:

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

5.2.4.2 An AIC shall be ~~originated whenever it is necessary to promulgate aeronautical information which does not qualify:~~ not be used for information that qualifies for inclusion in AIP or NOTAM.

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

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

5.2.4.4 A checklist of currently valid AIC ~~currently in force~~ shall be ~~issued at least once a year,~~ with distribution as for the AIC regularly provided.

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

5.2.5 Aeronautical Charts

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

...

Origin	Rationale - AIP, AIP Supplements, AIC and Aeronautical Charts
AIS-AIMSG	The proposed changes are intended to clarify requirements for AIP, AIP Supplements, AIC and Aeronautical Charts as part of the aeronautical information provided in a standardized presentation. With respect to the AIC, it was acknowledged that as of today an AIC can exist indefinitely without any requirements of having it withdrawn. The proposed changes address this issue and provide additional provisions related to AIC. The use of checklists and their periodicity to determine the validity of AIP supplements and AICs have been also thoroughly reviewed. Specific details have been moved to the PANS-AIM.

INITIAL PROPOSAL 9 related to originator, origination - terminology

CHAPTER 1. GENERAL

1.1 Definitions

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

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

...

Origin	Rationale - Originator, Origination - Terminology
AIS-AIMSG	Clear identification of the main functions, associated responsibilities, accountabilities and formal relations between different entities undertaking activities relating to the provision of aeronautical information is critical in the context of the transition from AIS to AIM. The introduction of the terms “origination” and “originator”, within the context of the provisions of AIM data and information, is intended to clarify the role of the entity that is accountable for data origination, from which the AIS organization receives aeronautical data and information. The relationship between data originators and the aeronautical information services organization should be specified through formal arrangements that identify clear roles and responsibilities, avoids misunderstanding and ensures data-quality.

INITIAL PROPOSAL 10
related to next intended user - terminology

CHAPTER 1. GENERAL

1.1 Definitions

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

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Origin	Rationale - Next Intended User - Terminology
AIS-AIMSG	The introduction of the term “next intended user” further clarifies roles and responsibilities along the data chain.

INITIAL PROPOSAL 11
related to Aeronautical Chart

CHAPTER 1. GENERAL

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1.1 Definitions

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

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Origin	Rationale: Aeronautical chart to be added
AIS-AIMSG	“ <i>Aeronautical chart</i> ” is a term used in Annex 15 and it is not included in the definitions.

INITIAL PROPOSAL 12
related to Vertical Reference System

CHAPTER 1. GENERAL

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1.2.2 Vertical reference system

1.2.2.1 Mean sea level (MSL) datum, ~~which gives the relationship of gravity related height (elevation) to a surface known as the geoid,~~ shall be used as the vertical reference system for international air navigation.

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

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

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

Origin:	Rationale: Vertical Reference System
AIS-AIMSG	The additional explanatory text is not necessary to mandate the use of MSL or EGM-96.

INITIAL PROPOSAL 13
related to Aeronautical Information Updates

CHAPTER 6. AERONAUTICAL INFORMATION UPDATES

6.1 General specifications

6.1.1 AIP Aeronautical data and aeronautical information shall be ~~amended or reissued at such regular intervals as may be necessary to keep them kept~~ up to date .

6.2 Aeronautical Information Regulation and Control (AIRAC)

6.2.1 Information concerning the following circumstances ~~listed in Appendix 4, Part 1,~~ shall be distributed under the regulated system (AIRAC), i.e. basing establishment, withdrawal or significant changes upon a series of common effective dates at intervals of 28 days, including 14 8 January 20105: -
~~The information notified therein 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.

Note.—Guidance material on the procedures applicable to the AIRAC system is contained in the Aeronautical Information Services Manual (Doc 8126).

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

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

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

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

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

e) Meteorological facilities (including broadcasts) and procedures.

f) Runways and stopways.

g) Taxiways and aprons.

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

i) Approach and runway lighting.

j) Aerodrome operating minima if published by a State.

6.2.2 The information notified therein under the AIRAC system shall not be changed further for at least another 28 days after the effective date, unless the circumstance notified is of a temporary nature and would not persist for the full period.

6.2.3 Information provided under the AIRAC system in paper copy form shall be distributed made available by the AIS unit at least 42 days in advance of the effective date with the objective of reaching so as to reach recipients at least 28 days in advance of the effective date.

Note.— ~~AIRAC information provided under the AIRAC system in paper copy form shall be~~ is distributed by the AIS unit at least 42 days in advance of the AIRAC effective dates with the objective of reaching recipients at least 28 days in advance of the effective date.

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

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

6.2.6 **Recommendation.**— ~~The use of the date in the AIRAC cycle which occurs between 21 December and 17 January inclusive should be avoided as an effective date for the introduction of significant changes under the AIRAC system.~~ The regulated system (AIRAC) should also be used for the provision of information relating to the establishment and withdrawal of, and premeditated significant changes in, the circumstances listed in ~~Appendix 4, Part 2,~~ below:

- a) Position, height and lighting of navigational obstacles.
- b) Hours of service of aerodromes, facilities and services.
- c) Customs, immigration and health services.
- d) Temporary danger, prohibited and restricted areas and navigational hazards, military exercises and mass movements of aircraft.
- e) Temporary areas or routes or portions thereof where the possibility of interception exists.

6.2.7 **Recommendation.**— Whenever major changes are planned and where advance notice is desirable and practicable, information ~~provided in paper copy form~~ should be distributed made available by the AIS so as to reach recipients ~~unit~~ 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 in ~~Appendix 4, Part 3,~~ below, and other major changes if deemed necessary.

- a) New aerodromes for international IFR operations.
- b) New runways for IFR operations at international aerodromes.
- c) Design and structure of the air traffic services route network.
- d) Design and structure of a set of terminal procedures (including change of procedure bearings due to magnetic variation change).
- e) Circumstances listed in ~~Part 1 6.2.1~~ if the entire State or any significant portion thereof is affected or if cross-border coordination is required.

Note.— Guidance material on what constitutes a major change is included in Doc 8126.

6.3 Aeronautical Information Product updates

~~6.3.1 States that have established an aeronautical database shall, when updating its contents concerning the circumstances listed in Appendix 4, Part 1, ensure that the effective dates of data coincide with the established AIRAC effective dates.~~

Origin	Rationale – Aeronautical Information Updates
AIS-AIMSG	Most of the requirements about the AIRAC cycle refer to how aeronautical information updates should be notified. The proposed changes better clarify how and when updates should be made available, update the terminology and provides the correct references to the ICAO documents.

INITIAL PROPOSAL 14 related to NOTAM - Improvement proposals

CHAPTER 5. AERONAUTICAL INFORMATION PRODUCTS AND SERVICES

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5.2.6 NOTAM

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

5.2.6.1 A checklist of valid NOTAM shall be regularly provided ~~issued as a NOTAM over the aeronautical fixed service (AFS) at intervals of not more than one month using the NOTAM Format specified in Appendix 6. One NOTAM shall be issued for each series.~~

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

...

5.4.2 NOTAM distribution

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

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

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

5.4.2.4 When a NOTAM ~~exchanged as specified in 5.3.4~~ 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.

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

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

5.4.2.7 **Recommendation.**— *Selective distribution lists should be used when practicable.*

Note.— ~~These lists are intended to obviate superfluous distribution of information. Guidance material relating to this~~ selective distribution lists is contained in the Aeronautical Information Services Manual (Doc 8126).

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CHAPTER 6. AERONAUTICAL INFORMATION UPDATES

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6.3.2 NOTAM

6.3.2.1 When an AIP Amendment or an AIP Supplement is published in accordance with AIRAC procedures, a "Trigger" NOTAM shall be originated ~~giving a brief description of the contents, the effective date and time, and the reference number of the amendment or supplement. This NOTAM shall come into force on the same effective date and time as the amendment or supplement and shall remain valid in the pre-flight information bulletin for a period of fourteen days.~~

Note.— ~~Guidance material for the origination of NOTAM announcing the existence of AIRAC AIP Amendments or AIP Supplements ("Trigger NOTAM") is contained in the Aeronautical Information Services Manual (Doc 8126). Detailed specifications concerning the Trigger NOTAM are contained in the PANS-AIM (Doc 10066).~~

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

Note 1.— ~~Operationally significant changes concerning circumstances listed in Appendix 4, Part 1, are issued under the Aeronautical Information Regulation and Control (AIRAC) system specified in Chapter 6.~~

— *Note 2.*— ~~Information of short duration containing extensive text and/or graphics is published as an AIP Supplement (see Chapter 4, 4.4).~~

6.3.2.3 A NOTAM shall be originated and issued concerning the following information:

- a) establishment, closure or significant changes in operation of aerodrome(s) ~~or~~ heliport(s) or runways;
- b) establishment, withdrawal and significant changes in operation of aeronautical services (AGA, AIS, ATS, CNS, MET, SAR, etc.);
- c) establishment, withdrawal and significant changes in operational capability of radio navigation and air-ground communication services. This includes: interruption or return to operation, change of frequencies, change in notified hours of service, change of identification, change of orientation (directional aids), change of location, power increase or decrease amounting to 50 per cent or more, change in broadcast schedules or contents, or irregularity or unreliability of operation of any radio navigation and air-ground communication services or limitations of relay stations including operational impact, affected service, frequency and area;
- d) unavailability of back-up and secondary systems, having a direct operational impact;
- ~~de~~) establishment, withdrawal or significant changes made to visual aids;
- ~~ef~~) interruption of or return to operation of major components of aerodrome lighting systems;
- ~~fg~~) establishment, withdrawal or significant changes made to procedures for air navigation services;
- ~~gh~~) occurrence or correction of major defects or impediments in the manoeuvring area;
- ~~hi~~) changes to and limitations on availability of fuel, oil and oxygen;
- ~~ij~~) major changes to search and rescue facilities and services available;
- ~~jk~~) establishment, withdrawal or return to operation of hazard beacons marking obstacles to air navigation;
- ~~kl~~) changes in regulations requiring immediate action, e.g. prohibited areas for SAR action;
- ~~lm~~) presence of hazards which affect air navigation (including obstacles, military exercises, displays, fireworks, sky lanterns, rocket debris, races and major parachuting events outside promulgated sites);
- n) planned laser emissions, laser displays and search lights if pilots' night vision is likely to be impaired;
- ~~mo~~) erecting or removal of, or changes to, obstacles to air navigation in the take-off/climb, missed approach, approach areas and runway strip;
- ~~np~~) establishment or discontinuance (including activation or deactivation) as applicable, or changes in the status of prohibited, restricted or danger areas;

- eq) 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;
- pr) allocation, cancellation or change of location indicators;
- qs) ~~significant changes in aerodrome/heliport rescue and fire fighting category provided changes in the level of protection normally available at an aerodrome/heliport for rescue and fire fighting purposes. NOTAM shall be originated only when a change of category is involved and such change of category shall be clearly stated~~ (see Annex 14, Volume I, Chapter 9, and Attachment A, Section 187);
- rt) 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;
- su) outbreaks of epidemics necessitating changes in notified requirements for inoculations and quarantine measures;
- tv) forecasts of solar cosmic radiation, where provided;
- uw) 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;
- vx) 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;
- wy) 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~~
- xz) implementation of short-term contingency measures in cases of disruption, or partial disruption, of air traffic services and related supporting services; ~~and~~
- aa) specific loss of satellite based navigation systems integrity.

Note.— See Annex 11, 2.31 and Attachment C to that Annex.

6.3.2.4 The following information shall not be notified by NOTAM:

- a) routine maintenance work on aprons and taxiways which does not affect the safe movement of aircraft;
- b) runway marking work, when aircraft operations can safely be conducted on other available runways, or the equipment used can be removed when necessary;
- c) temporary obstructions in the vicinity of aerodromes/heliports that do not affect the safe operation of aircraft;

- d) partial failure of aerodrome/heliport lighting facilities where such failure does not directly affect aircraft operations;
- e) partial temporary failure of air-ground communications when suitable alternative frequencies are known to be available and are operative;
- f) the lack of apron marshalling services and road traffic control;
- g) the unserviceability of location, destination or other instruction signs on the aerodrome movement area;
- h) parachuting when in uncontrolled airspace under VFR (see 5.1.1.1 l)), when controlled, at promulgated sites or within danger or prohibited areas;
- i) training activities by ground units;
- j) unavailability of back-up and secondary systems if these do not have an operational impact;
- k) limitations to airport facilities or general services with no operational impact;
- l) national regulations not affecting general aviation;
- m) announcement or warnings about possible/potential limitations, without any operational impact;
- n) general reminders on already published information;
- o) availability of equipment for ground units without containing information on the operational impact for airspace and facility users;
- p) information about laser emissions without any operational impact and fireworks below minimum flying heights;
- q) closure of movement area parts in connection with planned work locally coordinated of duration of less than one hour;
- r) closure, changes, unavailability in operation of aerodrome(s)/heliport(s) other than aerodrome(s)/heliport(s) operation hours;
- s) other non-operational information of a similar temporary nature.

Note.— Information which relates to an aerodrome and its vicinity and does not affect its operational status may be distributed locally during pre-flight or in-flight briefing or other local contact with flight crew members.

Origin	Rationale – NOTAM - Improvement proposals
AIS-AIMSG	In order to make NOTAM more “fit for purpose”, additional operational conditions are included in the provisions to properly identify when a NOTAM shall/shall not be originated. It is believed that the various

	inclusions and refinements to the lists will promote consistency and serve to refine NOTAM output. The requirement to deliver complete and consistent NOTAM information, involving States obligations on NOTAM distribution, language used and NOTAM series management has been also recognised and reinforced by the proposed amendment. A new requirement has been introduced in paragraph 5.4.2.6 concerning the need for an originating State to grant, upon request, the distribution of NOTAM series other than those distributed internationally. Domestic NOTAMs are becoming of increasing importance to airlines that aim at making their operations more efficient. Airports, that were only of national relevance in the past, are now starting to be used for international operations. Additionally, the intention of the proposed requirement is for a State to enable a “one-stop-shop AIS service”, combining international and domestic flights, where all NOTAMs can be received by one provider only. It is important to underline that this requirement reflects the users’ needs. Concerning the impact of the proposed requirement, in the majority of situations, it is considered negligible. There is no change needed to the system configuration and neither to the NOTAM series or content. The proposed amendment entails only the addition of an AFTN address in the distribution list of NOTAM. However, in certain circumstances, issues were raised. In those cases, all airports would need to be renamed using the ICAO four-letter identifier; or the NOTAMs series identification alphabet would need to be attached to the domestic NOTAMs. In those specific cases, the impact is substantial.

INITIAL PROPOSAL 15
related to formal arrangements through the whole data chain

CHAPTER 2. RESPONSIBILITIES AND FUNCTIONS

2.3 Exchange of aeronautical data and aeronautical information

...

2.3.2 ~~Where more than one international NOTAM office is designated within a State, the extent of responsibility and the territory covered by each office shall be defined.~~ **Recommendation.**— *Formal arrangements should be established between those parties providing aeronautical data and aeronautical information on behalf of the States and their users in relation to the provision of the service.*

Note.— *Guidance material on such formal arrangements is contained in Doc 8126.*

...

Origin	Rationale – Formal arrangements through the whole data chain
AIS-AIMSG	Recommendation 2.3.2 is introduced in order to address section 3.6.2 which states that quality management should be applicable to the whole aeronautical data chain, from data origination to distribution to the next intended user, taking into consideration the intended use of data. Formal arrangements are the recommended solution to ensure that quality management spans the aeronautical data chain.

INITIAL PROPOSAL 16 related to pre-flight information services and post-flight information services

CHAPTER 2. RESPONSIBILITIES AND FUNCTIONS

...

2.2 AIS responsibilities and functions

...

2.2.4 An AIS shall, in addition, obtain aeronautical data and aeronautical information to enable it to provide pre-flight information service and to meet the need for in-flight information:

- a) from the AIS of other States;
- b) from other sources that may be available.

Note.— One such source is the subject of a provision in 8.3-5.6.

...

CHAPTER 5. AERONAUTICAL INFORMATION PRODUCTS AND SERVICES

...

5.5 Pre-flight Information Service

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

5.5.2 Aeronautical information provided for pre-flight planning purposes at the aerodromes/heliports referred to in 8.1.1 shall include relevant: shall include information of operational significance from the elements of the Aeronautical Information Products.

- a) ~~elements of the Integrated Aeronautical Information Package;~~
- b) ~~maps and charts.~~

Note: 1. — The ~~documentation listed in a) and b)~~ elements of the Aeronautical Information Products may be limited to national publications and when practicable, those of immediately adjacent States, provided a complete library of aeronautical information is available at a central location and means of direct communications are available ~~with between the aerodrome AIS unit and~~ that library.

Note 2. — A recapitulation of valid NOTAM of operational significance and other information of urgent character ~~shall~~ may be made available to flight crews in the form of plain-language pre-flight information bulletins (PIB). ~~Note.~~—Guidance material on the preparation of PIB is contained in the Aeronautical Information Services Manual (Doc 8126).

5.6 Post-flight information service

5.6.1 For any aerodrome/heliport used for international air operations, ~~Arrangements shall be made to receive at aerodromes/heliports information concerning the state and operation of air navigation facilities or services noted by aircrews and shall ensure that such information is made available to the aeronautical information service for such distribution as the circumstances necessitate.~~

5.6.2 ~~Arrangements shall be made to receive at aerodromes/heliports information concerning the state and operation of air navigation facilities or services noted by aircrews and~~ The arrangements specified in 5.6.1 shall ensure that such information is made available to the aeronautical information service for ~~such~~ distribution as the circumstances necessitate.

5.6.3 For any aerodrome/heliport used for international air operations, ~~Arrangements shall be made to receive at aerodromes/heliports information concerning the presence of birds wildlife hazard observed by aircrews and shall ensure that such information is made available to the aeronautical information service for such distribution as the circumstances necessitate.~~

5.6.4 ~~Arrangements shall be made to receive at aerodromes/heliports information concerning the presence of birds observed by aircrews and shall ensure that such information is~~ The information about presence of wildlife hazard shall be made available to the aeronautical information service for ~~such~~ distribution as the circumstances necessitate.

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

Origin	Rationale – Pre-flight Information Services and Post-flight information Services
AIS-AIMSG	The requirements of pre-flight and post-flight information are now included in Chapter 5, Aeronautical Information Products and Services. The purpose of the proposed changes is mostly to make the requirements more distinct and provide clarification. For both the pre-flight information services and the post-flight information services, the word “at” is replaced by “for” in order to avoid the interpretation that it is mandatory to have the pre-flight briefing or post-flight service personnel available on the aerodrome site.

	For the pre-flight information services: 1) The word “normally” is deleted as it could have excluded aerodromes used on a less regular basis for international traffic. 2) The provision of a PIB remains as an option (in a note); For the post-flight information service: 1) “Bird strike” is replaced by “wildlife”.

INITIAL PROPOSAL 17
related to CRC - performance-based requirements

CHAPTER 3. AERONAUTICAL INFORMATION MANAGEMENT

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3.4 Data error detection

3.4.1 ~~Aeronautical data and data sets shall be protected in accordance with data error detection, security, and authentication techniques.~~ Digital data error detection techniques shall be used during the transmission and/or storage of aeronautical data and digital data sets.

Note.— ~~Doc 8126 contains guidance material on data error detection, security and authentication techniques.~~

3.4.2 ~~Electronic aeronautical data sets shall be protected by the inclusion in the data sets of a 32-bit cyclic redundancy check (CRC) implemented by the application dealing with the data sets. This shall apply to the protection of the integrity classification of data sets as specified in 3.3.3.~~ Digital data error detection techniques shall apply to all integrity levels of data sets as specified in 3.2.3.

Note.— Detailed specifications concerning digital data error detection techniques are contained in the PANS-AIM (Doc 10066).

Note 1.— ~~This requirement does not apply to the communications systems used for the transfer of data sets.~~

Note 2.— ~~Guidance material on the use of a 32-bit CRC algorithm to implement a protection of electronic aeronautical data sets is contained in Doc 8126.~~

Origin	Rationale CRC - Performance-based requirements
AIS-AIMSG	Provisions relating to CRCs were first introduced into Annex 15 in Amendment 29 (July 1997).
	The AIS-AIMSG reviewed the purpose of CRCs in the context of “data

	protection” and acknowledged that the purpose was to detect errors in digital data that might be introduced during data transmission or storage. CRCs do not protect against intentional alteration of data. The AIS-AIMSG also affirmed that the current stipulation of CRCs was too prescriptive and that there were numerous cases where this had proven to be difficult to demonstrate compliance with. Electronic technology is much more mature and universal than when CRCs were first introduced into the Annexes; it is also important to recognise that the checksum validation is often already built into many of the applications used today. Moreover, there is a need to start considering protection mechanisms that guard against intentional corruption of data. The AIS-AIMSG agreed to introduce performance-based requirements to maintain data integrity by implementing a mechanism to detect errors in digital data introduced during transmission or storage.

INITIAL PROPOSAL 18
related to quality management system

CHAPTER 3. AERONAUTICAL INFORMATION MANAGEMENT

3.6 Quality management system

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

~~Note.—Supporting material in respect of the processing of aeronautical data is contained in RTCA Document DO-200A and EUROCAE Document ED-76—Standards for Processing Aeronautical Data. These standards support the development and application of aeronautical databases.~~

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

3.6.5 Each quality management system shall include the necessary policies, processes and procedures, including those for the use of metadata, to ensure and verify that aeronautical data are is

traceable throughout the aeronautical information data chain so as to allow any data anomalies or errors detected in use to be identified by root cause, corrected and communicated to affected users.

3.6.6 The established quality management system shall provide users with the necessary assurance and confidence that distributed aeronautical data and aeronautical information satisfy the aeronautical data quality requirements ~~for accuracy, resolution and integrity as specified in 3.2 and 3.3 and that the data traceability requirements are met through the provision of appropriate metadata as specified in 3.4. The system shall also provide assurance of the applicability period of intended use of aeronautical data and aeronautical information as well as that the agreed distribution dates will be met.~~

...

Origin	Rationale – Quality Management System
AIS-AIMSG	Corrections are provided to the text related to quality management system: 1) Paragraph 3.6.3, the official term to be used is “accredited certification body” rather than “approved organization”. 2) The Note is deleted because the equivalent information exists in the PANS-AIM 2.2.1. 3) The addition of “in knowledge, skills and abilities” in new Paragraph 3.6.4 is to provide clarification to the existing text. 4) In the new paragraph 3.6.6, the text is deleted because it is redundant.

INITIAL PROPOSAL 19
related to telecommunication requirements

Editorial Note.— The following text shown in its original location in Annex 15 is deleted.

CHAPTER 9. TELECOMMUNICATION REQUIREMENTS

~~9.1 International NOTAM offices shall be connected to the aeronautical fixed service (AFS).~~

~~9.1.1 The connections shall provide for printed communications.~~

~~9.2 Each international NOTAM office shall be connected, through the aeronautical fixed service (AFS), to the following points within the territory for which it provides service:~~

~~— a) area control centres and flight information centres;~~

~~— b) aerodromes/heliports at which an information service is established in accordance with Chapter 8.~~

~~9.3 **Recommendation.**— Subject to availability, satisfactory operation and bilateral/multilateral and/or regional air navigation agreements, the use of the public Internet should be~~

~~permitted for exchange of non-time critical types of aeronautical information.~~

~~——— Note. — Guidance material on non-time critical types of aeronautical information and relevant aspects of the public Internet is provided in the Guidelines on the Use of the Public Internet for Aeronautical Applications (Doc 9855).~~

Origin	Rationale – Telecommunication requirements
AIS-AIMSG	The development of Annex 15, Chapter 5 (Aeronautical Information Products and Services) and Chapter 6 (Aeronautical Information Updates) and PANS-AIM, Chapter 5 (Aeronautical Information Products and Services) provided the opportunity to remove Chapter 9 and combine the various distribution activities for AIS products and services into all-inclusive chapters.

INITIAL PROPOSAL 20
related to Annex 15, aerodrome mapping database, deleted text

Editorial Note.— The following text shown in its original location in Annex 15 is deleted.

~~11.3 Aerodrome mapping database — data set content and structure~~

...

~~Note 2. — Aerodrome mapping data feature definitions, constraints and rules applicable to aerodrome mapping data are contained in RTCA Document DO-272C/European Organization for Civil Aviation Equipment (EUROCAE) Document ED-99C — User Requirements for Aerodrome Mapping Information. These constraints ensure the connectivity between features on a spatial and functional level in accordance with the connections observed in the real world.~~

~~Note 3. — An application schema applicable to aerodrome mapping data feature definitions may be found in RTCA Document DO-291B and European Organization for Civil Aviation Equipment (EUROCAE) Document ED-119B — Interchange Standards for Terrain, Obstacle, and Aerodrome Mapping Data. This application schema contains a feature catalogue which specifies the feature types and associated attributes.~~

Origin	Rationale – Annex 15, Aerodrome Mapping Database, deleted text
AIS-AIMSG	The notes are removed as those referenced standards are already mentioned in the PANS-AIM, paragraph 5.3.3.3 (notes 2 and 3 and 4).

INITIAL PROPOSAL 21
related to Annex 15, terrain and obstacle data product specifications, deleted text

Editorial Note.— The following text shown in its initial location in Annex 15 is deleted.

10.4 — Terrain and obstacle data product specifications

10.4.1 — ~~To allow and support the interchange and use of sets of electronic terrain and obstacle data among different data providers and data users, the ISO 19100 series of standards for geographic information shall be used as a general data modelling framework.~~

10.4.2 — ~~A comprehensive statement of available electronic terrain and obstacle data sets shall be provided in the form of terrain data product specifications as well as obstacle data product specifications on which basis air navigation users will be able to evaluate the products and determine whether they fulfil the requirements for their intended use (application).~~

Note.— ~~ISO Standard 19131 specifies the requirements and outline of data product specifications for geographic information.~~

10.4.3 — ~~Each terrain data product specification shall include an overview, a specification scope, data product identification, data content and structure, reference system, data quality, data capture, data maintenance, data portrayal, data product delivery, additional information, and metadata.~~

10.4.4 — ~~The overview of terrain data product specifications or obstacle data product specifications shall provide an informal description of the product and shall contain general information about the data product. Specification of terrain data may not be homogenous across the whole data product but may vary for different parts of the data sets. For each such subset of data, a specification scope shall be identified. Identification information concerning both terrain and obstacle data products shall include the title of the product; a brief narrative summary of the content, purpose, and spatial resolution if appropriate (a general statement about the density of spatial data); the geographic area covered by the data product; and supplemental information.~~

10.4.5 — ~~Content information of feature based terrain data sets or of feature based obstacle data sets shall each be described in terms of an application schema and a feature catalogue. Application schema shall provide a formal description of the data structure and content of data sets while the feature catalogue shall provide the semantics of all feature types together with their attributes and attribute value domains, association types between feature types and feature operations, inheritance relations and constraints. Coverage is considered a subtype of a feature and can be derived from a collection of features that have common attributes. Both terrain and obstacle data product specifications shall identify clearly the coverage and/or imagery they include and shall provide a narrative description of each of them.~~

Note 1.— ~~ISO Standard 19109 contains rules for application schema while ISO Standard 19110 describes feature cataloguing methodology for geographic information.~~

Note 2.— ~~ISO Standard 19123 contains schema for coverage geometry and functions.~~

10.4.6 — ~~Both terrain data product specifications and obstacle data product specifications shall include information that identifies the reference system used in the data product. This shall include the spatial reference system and temporal reference system. Additionally, both data product specifications shall identify the data quality requirements for each data product. This shall include a statement on~~

~~acceptable conformance quality levels and corresponding data quality measures. This statement shall cover all the data quality elements and data quality sub-elements, even if only to state that a specific data quality element or sub-element is not applicable.~~

~~*Note.—ISO Standard 19113 contains quality principles for geographic information while ISO Standard 19114 covers quality evaluation procedures.*~~

~~10.4.7—Terrain data product specifications shall include a data capture statement which shall be a general description of the sources and of processes applied for the capture of terrain data. The principles and criteria applied in the maintenance of terrain data sets and obstacle data sets shall also be provided with the data specifications, including the frequency with which data products are updated. Of particular importance shall be the maintenance information of obstacle data sets and an indication of the principles, methods and criteria applied for obstacle data maintenance.~~

~~10.4.8—Terrain data product specifications shall contain information on how data held with data sets are presented, i.e. as a graphic output, as a plot or as an image. The product specifications for both terrain and obstacles shall also contain data product delivery information which shall include delivery formats and delivery medium information.~~

~~*Note.—ISO Standard 19117 contains a definition of the schema describing the portrayal of geographic information including the methodology for describing symbols and mapping of the schema to an application schema.*~~

~~10.4.9—The core terrain and obstacle metadata elements shall be included in the data product specifications. Any additional metadata items required to be supplied shall be stated in each product specification together with the format and encoding of the metadata.~~

~~*Note.—ISO Standard 19115 specifies requirements for geographic information metadata.*~~

Origin AIS-AIMSG	Rationale – Annex 15, Terrain and Obstacle data product specifications, deleted text The paragraph shown above have been simplified and generalized to be applicable to all datasets. The resulting provisions are located in the PANS-AIM, paragraph 5.3.

INITIAL PROPOSAL 22
related to Annex 15, AIP, deleted text

Editorial Note.— The following text shown in its original location in Annex 15 is deleted.

**CHAPTER 4. AERONAUTICAL INFORMATION
PUBLICATIONS (AIP)**

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~~4.1.1.1 **Recommendation.**— *Aeronautical Information Publications should, in addition, contain current information relating to those subjects enumerated in Appendix 1 that appear in italic type.*~~

...

~~4.2.7— All changes to the AIP, or new information on a republished page, shall be identified by a distinctive symbol or annotation.~~

Origin	Rationale – Annex 15, AIP, deleted text
AIS-AIMSG	4.1.1.1 has been removed because it is considered redundant. All the AIP subjects are extensively specified in Chapter 5 and Appendix 2 of the PANS-AIM. 4.2.7 has been deleted and more complete text from DOC 8126 has been used as a replacement; however this text has been moved to the PANS-AIM.

INITIAL PROPOSAL 23
related to Annex 15 , NOTAM requirements, deleted text

Editorial Note.— The following text shown in its original location in Annex 15 is deleted.

~~5.1 Origination~~

...

~~5.1.1.2 **Recommendation.**— The need for origination of a NOTAM should be considered in any other circumstance which may affect the operation of aircraft.~~

...

~~5.2 General specifications~~

...

~~5.2.13.3 A monthly plain language list of valid NOTAM, including indications of the latest AIP Amendments, AIC issued and a checklist of AIP Supplements, shall be prepared with a minimum of delay and forwarded by the most expeditious means to recipients of the Integrated Aeronautical Information Package.~~

...

Origin	Rationale – Annex 15 , NOTAM requirements, Deleted text
AIS-AIMSG	Paragraph 5.1.1.2: the list of reasons for originating/not originating a NOTAM is sufficiently explained in paragraph 6.3.2; this Recommendation is redundant and is consequently deleted. Paragraph 5.2.13.3: there is no need for this provision, as it becomes redundant with requirements provided in Chapter 5 with respect to the provision of checklists for each Aeronautical Information Product.

INITIAL PROPOSAL 24
related to Annex 15 pre-flight information, deleted text

Editorial Note.— The following text shown in its original location in Annex 15 is deleted.

8.1 Pre-flight information

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~~8.1.2.1 Additional current information relating to the aerodrome of departure shall be provided concerning the following:~~

- ~~— a) construction or maintenance work on or immediately adjacent to the manoeuvring area;~~
- ~~— b) rough portions of any part of the manoeuvring area, whether marked or not, e.g. broken parts of the surface of runways and taxiways;~~
- ~~— c) presence and depth of snow, ice or water on runways and taxiways, including their effect on surface friction;~~
- ~~— d) snow drifted or piled on or adjacent to runways or taxiways;~~
- ~~— e) parked aircraft or other objects on or immediately adjacent to taxiways;~~
- ~~— f) presence of other temporary hazards;~~
- ~~— g) presence of birds constituting a potential hazard to aircraft operations;~~
- ~~— h) failure or irregular operation of part or all of the aerodrome lighting system including approach, threshold, runway, taxiway, obstruction and manoeuvring area unserviceability lights and aerodrome power supply;~~
- ~~— i) failure, irregular operation and changes in the operational status of SSR, ADS-B, ADS-C, CPDLC, D-ATIS, D-VOLMET, radio navigation services, VHF aeromobile channels, RVR observing system, and secondary power supply; and~~
- ~~— j) presence and operation of humanitarian relief missions, such as those undertaken under the auspices of the United Nations, together with any associated procedures and/or limitations applied thereof.~~

Origin	Rationale – Annex 15 Pre-flight Information, deleted text
AIS-AIMSG	The text is deleted from Annex 15 because these matters (of operational significance) are already covered by the scope of Aeronautical Information Products. Additionally, it is not necessary to differentiate between aerodrome of departure and aerodrome of arrival.

INITIAL PROPOSAL 25
related to Annex 15, AIRAC, deleted text

Editorial Note.— The following text shown in its original location in Annex 15 is deleted.

~~6.3.2 Information provided as electronic media, concerning the circumstances listed in Appendix 4, Part 1, shall be distributed/made available by the AIS unit so as to reach recipients at least 28 days in advance of the AIRAC effective date.~~

Origin	Rationale – Annex 15, AIRAC, deleted text
AIS-AIMSG	Paragraph 6.3.2 has been deleted because it is considered redundant; the same requirement is now specified in Chapter 6, paragraph 6.2.1.

INITIAL PROPOSAL 26
related to Annex 15, Horizontal reference system, deleted text

1.2 Common reference systems for air navigation

1.2.1 Horizontal reference system

~~*Note 2.— Specifications governing the determination and reporting (accuracy of field work and data integrity) of WGS 84 related aeronautical coordinates for geographical positions established by air traffic services are given in Annex 11, Chapter 2, and Appendix 5, Table 1, and for aerodrome/heliport related positions, in Annex 14, Volumes I and II, Chapter 2, and Table A5-1 and Table 1 of Appendices 5 and 1, respectively.*~~

Origin	Rationale – Annex 15 , Horizontal Reference system, deleted text
AIS-AIMSG	The paragraph shown above has been deleted because it is considered redundant; general requirements on determination and reporting of aeronautical data are provided in paragraph 4.1.2

INITIAL PROPOSAL 27
related to Annex 15, Foreword

Historical background

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Applicability

The Standards and Recommended Practices in this document govern the application of the *Procedures for Air Navigation Services — Aeronautical Information Management* (PANS-AIM, Doc 10066) and the *Regional Supplementary Procedures — Aeronautical Information Services*, contained in Doc 7030, in which the latter document will be found subsidiary procedures of regional application.

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Origin	Rationale – Annex 15 , Foreword
AIS-AIMSG	The Foreword needs to be updated for clarification of the relationship between Annex 15 and associated Procedures (PANS) as well as the Regional Supplementary Procedures.

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NEW PANS-AIM — TABLE OF CONTENTS

INITIAL PROPOSAL 1

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Origin	Rationale - PANS-AIM
AIS-AIMSG	Procedures for Air Navigation Services (PANS) contain for the most part operating procedures regarded as not yet having attained a sufficient degree of maturity for adoption as SARPS, as well as material of a more permanent character which is considered too detailed for incorporation in an Annex, or is susceptible to frequent amendment, for which the processes of the Convention would be too cumbersome. It has been acknowledged that many of the existing specifications in Annex 15 are too detailed and would be much more appropriate to be incorporated into a PANS document. At the same time, while many specifications in Doc 8126 are too specific to be incorporated into Annex 15, their promulgation in a guidance document may not be conducive to reaching a higher level of harmonization. Following an assessment of Annex 15 and Doc 8126, it was observed that specifications published as PANS would provide a means for increased harmonization within the domain of AIS/AIM as well as provide a vehicle for the emerging technical requirements of AIM.

ATTACHMENT F to State letter AN 2/2.1.1-17/22

NEW PANS-AIM — INDICATION OF TEXT RELOCATION

NOTES ON THE PRESENTATION OF THE AMENDMENT

The text of the amendment is arranged to show text coming from Annex 15 with a double underline and text coming from Doc 8126 with a single underline, as shown below:

Text coming from Annex 15 is shown with a double underline.

Existing text

Text coming from Doc 8126 is shown with a single underline.

Existing text

New text to be inserted is highlighted with grey shading.

New text to be inserted

INITIAL PROPOSAL 1

FOREWORD

New text

1.1 Historical background

New text

1.2 Scope and purpose

New text

1.3 Status

New text

1.4 Implementation

New text

1.5 Publication of differences

New text

1.6 Promulgation of information

New text

Chapter 1

DEFINITIONS

When the following terms are used in the Standards and Recommended Practices for aeronautical information services, they have the following meanings:

Accuracy. A degree of conformance between the estimated or measured value and the true value.

Note.— For measured positional data the accuracy is normally expressed in terms of a distance from a stated position within which there is a defined confidence of the true position falling.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

AIS product. Aeronautical data and aeronautical information provided in the form of the elements of the Integrated Aeronautical Information Package (except NOTAM and PIB), including aeronautical charts, or in the form of suitable electronic media.

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

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

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

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

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

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

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

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

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

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

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

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

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

Automatic terminal information service (ATIS). The automatic provision of current, routine information to arriving and departing aircraft throughout 24 hours or a specified portion thereof:

Data link-automatic terminal information service (D-ATIS). The provision of ATIS via data link.

Voice-automatic terminal information service (Voice-ATIS). The provision of ATIS by means of continuous and repetitive voice broadcasts.

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

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

Canopy. Bare Earth supplemented by vegetation height.

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

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

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

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

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

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

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

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

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

Data quality. A degree or level of confidence that the data provided meet the requirements of the data user in terms of accuracy, resolution and integrity.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Integrated Aeronautical Information Package. A package in paper, or electronic media which consists of the following elements:

- AIP, including amendment service;
- Supplements to the AIP;
- NOTAM and PIB;
- AIC; and
- checklists and lists of valid NOTAM.

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

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

- a) routine data: there is a very low probability when using corrupted routine data that the continued

safe flight and landing of an aircraft would be severely at risk with the potential for catastrophe;

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

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

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

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

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

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

Metadata. Data about data (ISO 19115*).

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

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

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

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

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

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

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

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

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

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

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

- a) are located on an area intended for the surface movement of aircraft; or
- b) extend above a defined surface intended to protect aircraft in flight; or
- c) stand outside those defined surfaces and that have been assessed as being a hazard to air navigation.

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

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

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

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

Performance-based navigation (PBN). Area navigation based on performance requirements for aircraft operating along an ATS route, on an instrument approach procedure or in a designated airspace.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Note.— In practical terms, depending on the method of data collection used, terrain represents the continuous surface that exists at the bare Earth, the top of the canopy or something in-between, also known as “first reflective surface”.

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

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

— the origin of materials and parts;

— the processing history; and

— the distribution and location of the product after delivery.

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

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

Note 1.— The term “verified” is used to designate the corresponding status.

Note 2.— Confirmation can comprise activities such as:

— performing alternative calculations;

— comparing a new design specification with a similar proven design specification;

— undertaking tests and demonstrations; and

— reviewing documents prior to issue.

VOLMET. Meteorological information for aircraft in flight.

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

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

Editorial Note.— Relocated from Annex 15, 1.1

Chapter 2

AERONAUTICAL INFORMATION MANAGEMENT

2.1- Information management requirements

New text

2.1.1 Collection

2.1.1.1- New text

2.1.1.2- New text

2.1.1.3- New text

2.1.1.4- New text

2.1.1.5- New text

2.1.1.6- New text

2.1.2 Processing

2.1.2.1 - New text

Note 1. - New text

Note 2.— Guidance material on the aeronautical data quality requirements (accuracy, resolution, integrity, and traceability and protection requirements) may be found in the World Geodetic System — 1984 (WGS-84) Manual (Doc 9674).

Editorial Note.— Note 2 is relocated text from Annex 15, 3.2.2. – Note 2 (initial part)

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

Editorial Note.— Note 3 is relocated text from Annex 15, 3.2.2. – Note 2 (last part)

Note 4.— Guidance material on the management of aeronautical data quality is included in the Manual on the Quality Management System for Aeronautical Information Services (Doc 9839)(to be developed).

Editorial Note.— Note 4 is relocated text from Annex 15, Note 3 to 3.2.2.

Note 5.— New text

Note 6.— New text

2.1.2.2 - New text

2.1.3. Quality control

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

Editorial Note.— Note is relocated text from Annex 15, Note 2 to 3.3.3.2

2.1.3.1 - New text

2.1.3.2 - New text

2.1.4 Distribution

(To be developed)

2.2 Data integrity monitoring and assurance

2.2.1- New text

Note. — Guidance material in respect to the processing of aeronautical data and aeronautical information is contained in RTCA Document DO-200A and European Organization for Civil Aviation Equipment (EUROCAE) Document ED-76 — Standards for Processing Aeronautical Data.

Editorial Note.— Note is relocated text from Annex 15, Note 1 to 3.3.3.2.

2.2.2- New text

Note.— New text

Chapter 3

QUALITY AND SAFETY MANAGEMENT

3.1 Quality management system

New text

Note 1. — Quality management may be provided by a single quality management system or serial quality management systems.

Note 2. — International Organization for Standardization (ISO) 9000 series of quality assurance standards provide a basic framework for the development of a quality assurance programme and define the term “accredited certification body”. The details of a successful programme are to be formulated by each State and in most cases are unique to the State organization.

Note 3. — Letters of agreement concerning data quality between originator and distributor and between distributor and next intended user may be used to manage the aeronautical information data chain.

Note 4. — Guidance material concerning training methodology to ensure the competency of personnel is contained in the Aeronautical Information Management Training Development Manual (Doc 9991)(to be developed).

Editorial Note.— Notes 1 and 3 is relocated text from Annex 15, Notes to 3.7.2; Note 2 from Annex 15, Note 2 to 3.7.3; and Note 4 from Annex 15, Note to 3.7.4.

Chapter 4

AERONAUTICAL DATA REQUIREMENTS

4.1 Data Origination Requirements

4.1.1- New text

4.1.2 The order of accuracy for aeronautical data shall be as specified in Annex 11, Chapter 2, and Annex 14, Volumes I and II, Chapter 2. In that respect, three types of positional data shall be identified: surveyed points (runway thresholds, navigation aid positions, etc.), calculated points (mathematical calculations from the known surveyed points of points in space/fixes) and declared points (e.g. flight information region boundary points).

Editorial Note.— 4.1.2 is relocated text from Annex 15, 3.3.1

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

Editorial Note.— 4.1.3 is relocated text from Annex 15, 1.2.1.1

4.1.4 Geographical coordinates that have been transformed into WGS-84 coordinates but whose accuracy of original field work does not meet the requirements in Annex 11, Chapter 2, and Annex 14, Volumes I and II, Chapter 2, shall be identified by an asterisk.

Editorial Note.— 4.1.4 is relocated text from Annex 15, 1.2.1.3

4.1.5 At those geographical positions where the accuracy of EGM-96 does not meet the accuracy requirements for elevation and geoid undulation specified in Annex 14, Volumes I and II, on the basis of EGM-96 data, regional, national or local geoid models containing high resolution (short wavelength) gravity field data shall be developed and used. When a geoid model other than the EGM-96 model is used, a description of the model used, including the parameters required for height transformation between the model and EGM-96, shall be provided in the Aeronautical Information Publication (AIP).

Note.— Specifications governing determination and reporting (accuracy of field work and data integrity) of elevation and geoid undulation at specific positions at aerodromes/heliports are given in Annex 14, Volumes I and II, Chapter 2, and Table A5-2 and Table 2 of Appendices 5 and 1, respectively.

4.1.6 In addition to elevation referenced to the MSL (geoid), for the specific surveyed ground positions, geoid undulation (referenced to the WGS-84 ellipsoid) for those positions specified in Appendix 1 shall also be published.

Editorial Note.— 4.1.5 and 4.1.6 are relocated text from Annex 15, 1.2.2.3 and 1.2.2.4.

4.2 Metadata Requirements

4.2.1 The metadata to be collected shall include, as a minimum:

- a) the name of the organizations or entities performing any action of originating, transmitting or manipulating the data;
- b) the action performed; and
- c) the date and time the action was performed.

Editorial Note.— 4.2.1 is relocated text from Annex 15, 3.4.2

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

Editorial Note.— Note is relocated text from the Note associated with Annex 15, 3.4.1.

Chapter 5

AERONAUTICAL INFORMATION PRODUCTS AND SERVICES

5.1 General

5.1.1 - New text

5.1.2 Geographical coordinates which have been transformed into WGS-84 coordinates but whose accuracy of original field work does not meet the requirements in Annex 11, Chapter 2, and Annex 14, Volumes I and II, Chapter 2, shall be identified by an asterisk

Editorial Note.— 5.1.2 is relocated text from Annex 15, paragraph 1.2.1.3.

5.1.3 - New text

5.1.3.1 - New text

5.2 Aeronautical information in a standardized presentation

5.2.1 Aeronautical Information Publication (AIP)

5.2.1.1 Contents

5.2.1.1.1 The AIP must contain concise, current information relating to, and arranged under, the subject headings listed in Annex 15, Appendix 1. This facilitates both the locating of information under a specific heading and the storage/retrieval of the information using automated processing.

Editorial Note.— 5.2.1.1.1 is relocated text from Doc 8126, 5.1.3.

5.2.1.1.2 If no facilities or services are provided or no information is available for publication in respect of one of the categories of information specified in Annex 15, Appendix 1, an indication should be given as to which of these circumstances applies (e.g. “NIL” or “Not AVBL”).

Editorial Note.— 5.2.1.1.2 is relocated text from Doc 8126, 5.1.3.

5.2.1.1.3 - New text

5.2.1.1.4 - New text

5.2.1.2 General Specification

5.2.1.2.1 The issuing State and publishing authority must be clearly indicated on the cover.

Editorial Note.— 5.2.1.2.1 is relocated text from Doc 8126, 5.2.7 (initial part)

5.2.1.2.2 When two or more States combine to issue a joint AIP, this shall be made clear both on the cover and in the table of contents.

Editorial Note.— 5.2.1.2.2 is relocated text from Annex 15, 4.2.1.2

5.2.1.2.3 Each AIP shall be self-contained and shall include a table of contents.

Note.— If it is necessary by reason of bulk or for convenience, to publish an AIP in two or more parts or volumes, each of them will indicate that the remainder of the information is to be found in the other part(s) or volume(s).

Editorial Note.— 5.2.1.2.3 and the Note is relocated text from Annex 15, 4.2.1 and Note.

5.2.1.2.4 Each AIP shall not duplicate information within itself or from other sources.

Editorial Note.— 5.2.1.2.4 is relocated text from Annex 15, 4.2.1.1.

5.2.1.2.5 An AIP shall contain, in three parts, sections and subsections uniformly referenced to allow for standardized electronic data storage and retrieval, current information relating to, and arranged under, those subjects enumerated in Appendix 1 that appear in roman type, except that when the AIP, or volume of the AIP, is designed basically to facilitate operational use in flight, the precise format and arrangement may be left to the discretion of the State provided that an adequate table of contents is included.

Editorial Note.— 5.2.1.2.5 is relocated text from Annex 15, Note 1 and 4.1.1.

5.2.1.2.6 Each AIP shall be dated.

Editorial Note.— 5.2.1.2.6 is relocated text from Annex 15, 4.2.3 (first part).

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

Editorial Note.— 5.2.1.2.6.1 is relocated text from Annex 15, 4.2.3 (last part).

5.2.1.2.7 Charts, maps or diagrams shall be used, when appropriate, to complement or as a substitute for the tabulations or text of AIP.

Note.— Where appropriate, charts produced in conformity with Annex 4, may be used to fulfil this requirement. Guidance material as to the specifications of index maps and diagrams included in AIP is contained in the Aeronautical Information Services Manual (Doc 8126).

Editorial Note.— 5.2.1.2.7 and Note is relocated text from Annex 15, 4.1.4.

5.2.1.2.8 - When listing locations, the city or town should 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.

Editorial Note.— 5.2.1.2.8 is relocated text from Doc 8126, 5.5.2 b)

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

Editorial Note.— 5.2.1.2.9 is relocated text from Annex 15, 1.3.2

5.2.1.2.10 In the indication of the geographical coordinates of a location:

— the latitude should be given first;

— symbols for degrees, minutes or seconds should be omitted;

— two digits should always be used in expressing values of less than 10 degrees of latitude; and

— three digits should always be used in expressing values of less than 100 degrees of longitude.

Editorial Note.— 5.2.1.2.10 is relocated text from Doc 8126, 5.5.2 d)

5.2.1.2.11 When describing periods of activity, availability or operation, use of the term “weekday” should be avoided and the day or days in question should be specified;

Editorial Note.— 5.2.1.2.11 is relocated text from Doc 8126, 5.5.2 f)

5.2.1.2.12 **New text**

5.2.1.2.13 Index maps and diagrams included in the AIP should comply with the following specifications:

- a) Base map: The base map should be an outline map of the area adapted from existing material with general details. Graticules, topography and other details should be as simple as possible to permit rapid reproduction and amendment. Political subdivisions should be shown and identified. It should be produced in one colour.
- b) Sheet size and scale: The overall dimensions should be 210 mm × 297 mm. If a larger map is required, it should be folded to conform to this size. A uniform scale should be used for all charts produced as a series and other charts where practicable.
- c) Title and marginal Notes: The title should be shown on the top border and should be as short and simple as possible.
- d) Colours: The number of colours used should be kept to a minimum. If more than one colour is used, the colours should offer adequate contrast.
- e) Symbols: Symbols should conform, where practicable, to the ICAO Chart symbols shown in Annex 4, Appendix 2. The basic, general purpose symbols for AIP index maps are a closed circle ● and an open circle ○. Except when the symbols used are self-explanatory, a legend should be provided. For details for which no ICAO symbol has been provided, any appropriate symbol may be chosen provided it does not conflict with any ICAO symbol.

Editorial Note.— 5.2.1.2.13 is relocated text from Doc 8126, 5.6.

5.2.1.3 Specifications for AIP Amendments

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

Editorial Note.— 5.2.1.3.1 is relocated text from Annex15, 4.2.9.

5.2.1.3.2 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.

Editorial Note.— 5.2.1.3.2 is relocated text from Annex15, 4.2.8.

5.2.1.3.3 When a State has established the regular interval or publication dates for its AIP Amendments, these intervals or publication dates must be published in the AIP, Part 1 — General (GEN).

Editorial Note.— 5.2.1.3.3 is relocated text from Doc 8126, 5.9.7.

5.2.1.3.4 - New text

5.2.1.3.5 Each AIP Amendment shall be allocated a serial number, which shall be consecutive.

Editorial Note.— 5.2.1.3.5 is relocated text from Annex15, 4.3.2.

5.2.1.3.6 Each AIP Amendment page, including the cover sheet, shall display a publication date.

Editorial Note.— 5.2.1.3.6 is relocated text from Annex15, 4.3.3.

5.2.1.3.7 Each AIRAC AIP Amendment page, including the cover sheet, shall display an effective date.

Editorial Note.— 5.2.1.3.7 is relocated text from Annex15, 4.3.4.

5.2.1.3.7.1 When an effective time other than 0000 UTC is used, the effective time shall also be displayed on the cover sheet.

Editorial Note.— 5.2.1.3.7.1 is relocated text from Annex15, 4.3.4.

5.2.1.3.8 When an AIP Amendment is issued, it shall include references to the serial number of those elements, if any, of the Integrated Aeronautical Information Package which have been incorporated into the amendment.

Editorial Note.— 5.2.1.3.8 is relocated text from Annex15, 4.3.5

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

Editorial Note.— 5.2.1.3.9 is relocated text from Annex15, 4.3.6

5.2.1.3.10 Each amendment must include a checklist giving the current date of each loose-leaf page in the AIP, unless there are only two or three replacement sheets involved, and must provide a recapitulation of any outstanding manuscript corrections. The checklist must carry both the page number and date.

Editorial Note.— 5.2.1.3.10 is relocated text from Doc 8126, 5.9.13

5.2.1.4 Specifications for AIP Supplements

Note. Since the AIP is an operational document and therefore 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. The purpose of an AIP Supplement is to bring to the attention of users both temporary changes of long duration (three months or longer) and information of short duration containing extensive text or graphics which affect one or more parts of the AIP.

Editorial Note.— Note is relocated text from Doc 8126, 5.10.1

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

Editorial Note.— 5.2.1.4.1 is relocated text from Annex15, 4.4.2

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

Editorial Note.— Note is relocated text from Annex 15, Note to 4.4.1

5.2.1.4.2 - New text

5.2.1.4.3 When an AIP Supplement is sent in replacement of a NOTAM, it shall include a reference to the serial number of the NOTAM.

Editorial Note.— 5.2.1.4.3 is relocated text from Annex 15, 4.4.5.

5.2.1.4.4 A checklist of valid AIP Supplements shall be issued at intervals of not more than one month. This information shall be issued through the medium of the monthly plain-language list of valid NOTAM required by 5.2.13.3.

Editorial Note.— 5.2.1.4.4 is relocated text from Annex 15, 4.4.6

5.2.2 Aeronautical Information Circulars (AIC)

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

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

This shall include:

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

- 8) information on new hazards affecting aircraft handling techniques;
- 9) regulations relating to the carriage of restricted articles by air;
- 10) reference to the requirements of, and publication of changes in, national legislation;
- 11) aircrew licensing arrangements;
- 12) training of aviation personnel;
- 13) application of, or exemption from, requirements in national legislation;
- 14) advice on the use and maintenance of specific types of equipment;
- 15) actual or planned availability of new or revised editions of aeronautical charts;
- 16) carriage of communication equipment;
- 17) explanatory information relating to noise abatement;
- 18) selected airworthiness directives;
- 19) changes in NOTAM series or distribution, new editions of AIP or major changes in their contents, coverage or format;
- 20) advance information on the snow plan (see 7.1.1.2);
- 21) other information of a similar nature.

Editorial Note.— 5.2.2.1 is relocated text from Annex 15, 7.1.1.1

5.2.2.2 The snow plan published under AD 1.2.2 of Appendix 1 shall be supplemented by seasonal information, to be issued well in advance of the beginning of each winter — not less than one month before the normal onset of winter conditions — and shall contain information such as that listed below:

- a) a list of aerodromes/heliports where snow clearance is expected to be performed during the coming winter:
 - *1) in accordance with the runway and taxiway systems; or
 - *2) planned snow clearing, deviating from the runway system (length, width and number of runways, affected taxiways and aprons or portions thereof);
- *b) information concerning any centre designated to coordinate information on the current state of progress of clearance and on the current state of runways, taxiways and aprons;
- c) a division of the aerodromes/heliports into SNOWTAM distribution lists in order to avoid excessive NOTAM distribution;
- *d) an indication, as necessary, of minor changes to the standing snow plan;

*e) a descriptive list of clearance equipment;

*f) a listing of what will be considered as the minimum critical snow bank to be reported at each aerodrome/heliport at which reporting will commence.

Editorial Note.— 5.2.2.2 is relocated text from Annex 15, 7.1.1.2

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

Editorial Note.— 5.2.2.3 is relocated text from Annex 15, 7.2.1

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

Editorial Note.— 5.2.2.4 is relocated text from Annex 15, 7.3

5.2.2.5 - New text

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

Editorial Note.— 5.2.2.6 is relocated text from Annex 15, 7.2.2

Note.— 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.

Editorial Note.— *Note.* is relocated text from Doc 8126, 7.2

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

Editorial Note.— 5.2.2.7 is relocated text from Annex 15, 7.2.3

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

Editorial Note.— 5.2.2.8 is relocated text from Annex 15, 7.2.5

5.2.2.9 A checklist of NOTAM shall refer to the latest AIP Amendments, AIP Supplements and at least the internationally distributed AIC.

Editorial Note.— 5.2.2.9 is relocated text from Annex 15, 5.2.13.1

* This information, or any part of it, may be included in the AIP, if so desired.

5.2.3 Printed products

5.2.3.1 Printed AIP

5.2.3.1.1 AIP should be published in loose-leaf form unless the complete publication is reissued at frequent intervals.

Editorial Note.— 5.2.3.1.1 is relocated text from Annex 15, 4.2.2

5.2.3.1.2 Each AIP issued as a bound volume and each page of an AIP issued in loose-leaf form shall be so annotated as to indicate clearly:

- a) the identity of the AIP;
- b) the territory covered and subdivisions when necessary;
- c) the identification of the issuing State and producing organization (authority);
- d) page numbers/chart titles;
- e) the degree of reliability if the information is doubtful.

Editorial Note.— 5.2.3.1.2 is relocated text from Annex 15, 4.2.5

5.2.3.1.3 The issuing State and publishing authority must be clearly indicated on the cover. When two or more States publish an AIP jointly, this must also be clearly indicated both on the cover and in the table of contents.

Editorial Note.— 5.2.3.1.3 is relocated text from Doc 8126, 5.2.7

5.2.3.1.4 The normal method of amendment shall be by means of replacement sheets.

Editorial Note.— 5.2.3.1.4 is relocated text from Annex 15, 4.2.9 (last part)

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

Editorial Note.— 5.2.3.1.5 is relocated text from Doc 8126, 5.9.10

5.2.3.1.6 Each AIP Amendment page, including the cover sheet, must show a publication date. Each AIRAC AIP Amendment page, including the cover sheet, must show a publication date and an effective date.

Editorial Note.— 5.2.3.1.6 is relocated text from Doc 8126, 5.9.11

5.2.3.1.7 Many States will be able to produce the AIP in one volume. Where this is not practicable and the AIP is produced and made available in more than one volume, each volume must include a separate amendment and supplement service, and the following separate sections must be included in each volume:

- Preface
- Record of AIP Amendments
- Record of AIP Supplements
- Checklist of AIP pages
- List of current hand amendments.

Editorial Note.— 5.2.3.1.7 is relocated text from Doc 8126, 5.2.3

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

Editorial Note.— 5.2.3.1.8 is relocated text from Doc 8126, 5.2.4

5.2.3.1.9 A system of page numbering adaptable to the addition or deletion of sheets should be adopted. The page number should include:

- an identification of the part of the AIP;
- the section; and
- subsection, as applicable;

thus creating a separate set of numbers for each subject (e.g. GEN 2.1-3, ENR 4.1-1 or AD 2.2-3).

Editorial Note.— 5.2.3.1.9 is relocated text from Doc 8126, 5.5.1

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

Editorial Note.— 5.2.3.1.10 is relocated text from Annex 15, 4.2.4

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

Editorial Note.— 5.2.3.1.11 is relocated text from Annex 15, 4.2.6

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

Editorial Note.— 5.2.3.1.12 is relocated text from Doc 8126, 5.2.6

5.2.3.1.13 Maps and charts should be paginated in the same manner as other material.

Editorial Note.— 5.2.3.1.13 is relocated text from Doc 8126, 5.5.1 (last part)

5.2.3.1.14 AIP Supplement pages should be coloured in order to be conspicuous, preferably in yellow.

Editorial Note.— 5.2.3.1.14 is relocated text from Annex 15, 4.4.7

5.2.3.1.15 AIP Supplement pages should be kept as the first item in the AIP parts.

Editorial Note.— 5.2.3.1.15 is relocated text from Annex 15, 4.4.8

Note.— New text

5.2.3.1.16 AIP Supplement pages shall be kept in the AIP as long as all or some of their contents remain valid.

Editorial Note.— 5.2.3.1.16 is relocated text from Annex 15, 4.4.3

5.2.3.1.17 Each AIP Supplement page must show a publication date.

Editorial Note.— 5.2.3.1.17 is relocated text from Doc 8126, 5.10.2

5.2.3.1.18 Each AIRAC AIP Supplement page must show a publication date and an effective date.

Editorial Note.— 5.2.3.1.18 is relocated text from Doc 8126, 5.10.2

5.2.3.2 Printed AIC

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

Editorial Note.— 5.2.3.2.1 is relocated text from Annex 15, 7.2.4

5.2.3.2.2 In addition, it is highly recommended that AIC be colour coded by subject where there are sufficient circulars in force to warrant such identification, e.g.:

- a) white — administrative;
- b) yellow — ATC;
- c) pink — safety;
- d) mauve — danger area map; and

e) green — maps/charts.

Editorial Note.— 5.2.3.2.2 is relocated text from Doc 8126, 7.3.1

5.2.4 Electronic AIP (eAIP)

Note 1.— This composite electronic document is named “Electronic AIP” (eAIP) and may be based on a format that allows for digital data exchange.

Note 2.— Guidance material for the production and provision of the eAIP is contained in Doc 8126.

Editorial Note.— Notes 1 and 2 are relocated text from Annex 15, Notes to 4.6.1

5.2.4.1 When provided, the information content of the eAIP and the structure of chapters, sections and sub-sections shall follow the content and structure of the paper AIP. The eAIP shall include files that allow for printing a paper AIP.

Editorial Note.— 5.2.4.1 is relocated text from Annex 15, 4.6.2

5.2.4.2 – New text

5.2.4.3 When provided, the eAIP should be available on a physical distribution medium (CD, DVD, etc.) and/or online on the Internet.

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

Editorial Note.— 5.2.4.3 and Note are relocated text from Annex 15, 4.6.3

5.2.5 NOTAM

5.2.5.1 General specifications

5.2.5.1.1 Except as otherwise provided in 5.2.3 and 5.2.4, each NOTAM shall contain the information in the order shown in the NOTAM Format in Appendix 6.

Editorial Note.— 5.2.5.1.1 is relocated text from Annex 15, 5.2.1

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

Editorial Note.— The Note is relocated text from Annex 15, Note to 5.2.2

5.2.5.1.2 Text of NOTAM 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.

Editorial Note.— 5.2.5.1.2 is relocated text from Annex 15, 5.2.2

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

Editorial Note.— Note is relocated text from Annex 15, Note to 5.2.2.1

5.2.5.1.3 When NOTAM are selected for international distribution, English text shall be included for those parts expressed in plain language.

Editorial Note.— 5.2.5.1.3 is relocated text from Annex 15, 5.2.2.1

Note.— New text

5.2.5.1.4 Information concerning snow, slush, ice and standing water on aerodrome/heliport pavements shall, when reported by means of a SNOWTAM, contain the information in the order shown in the SNOWTAM Format in Appendix 2.

Editorial Note.— 5.2.5.1.4 is relocated text from Annex 15, 5.2.3

5.2.5.1.5 Information concerning an operationally significant change in volcanic activity, a 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 3.

Editorial Note.— 5.2.5.1.5 is relocated text from Annex 15, 5.2.4

5.2.5.1.6 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.

Editorial Note.— 5.2.5.1.6 is relocated text from Annex 15, 5.2.6

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

5.2.5.1.7.1 The series, location indicator and subject of both NOTAM shall be the same.

5.2.5.1.8 Only one NOTAM shall be cancelled or replaced by a NOTAM.

Editorial Note.— 5.2.5.1.7; 5.2.5.1.7.1; 5.2.5.1.8 are relocated text from Annex 15, 5.2.7

5.2.5.1.9 Each NOTAM shall deal with only one subject and one condition of the subject.

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

Editorial Note.— 5.2.5.1.9 and Note are relocated text from Annex 15, 5.2.8

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

Editorial Note.— 5.2.5.1.10 is relocated text from Annex 15, 5.2.9

5.2.5.1.11 Each NOTAM shall be transmitted as a single telecommunication message.

Editorial Note.— 5.2.5.1.11 is relocated text from Annex 15, 5.2.10

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

Editorial Note.— 5.2.5.1.12 is relocated text from Annex 15, 5.2.11

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

Editorial Note.— 5.2.5.1.13 is relocated text from Annex 15, 5.2.12

5.2.5.1.13.1 In no case shall a curtailed form of such indicators be used.

Editorial Note.— 5.2.5.1.13.1 is relocated text from Annex 15, 5.2.12.1

5.2.5.1.14 Where no ICAO location indicator is assigned to the location, its place name spelt in accordance with 1.3.2 shall be entered in plain language.

Editorial Note.— 5.2.5.1.14 is relocated text from Annex 15, 5.2.12.2

5.2.5.2 NOTAM number and series allocation

5.2.5.2.1 The NOTAM originator 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.

Editorial Note.— 5.2.5.2.1 is relocated text from Annex 15, 5.2.5

5.2.5.2.2 Letters A to Z, with the exception of S and T, may be used to identify a NOTAM series.

Editorial Note.— 5.2.5.2.2 is relocated text from Annex 15, Note to 5.2.5

5.2.5.2.3— New text

5.2.5.2.4— New text

5.2.5.2.5— New text

5.2.5.2.6— New text

5.2.5.3 NOTAM Checklist

5.2.5.3.1 A checklist of valid NOTAM shall be issued as a NOTAM over the Aeronautical Fixed Service (AFS) at intervals of not more than one month using the NOTAM Format specified in Appendix 6.

Note.— Omitting a NOTAM from the checklist does not serve to cancel a NOTAM.

Editorial Note.— 5.2.5.3.1 and Note are relocated text from Annex 15, 5.2.13

5.2.5.3.2 One NOTAM shall be issued for each series.

Editorial Note.— 5.2.5.3.2 is relocated text from Annex 15, 5.2.13

5.2.5.3.3 A checklist of NOTAM shall refer to the latest AIP Amendments, AIP Supplements and at least the internationally distributed AIC.

Editorial Note.— 5.2.5.3.3 is relocated text from Annex 15, 5.2.13.1

5.2.5.3.4 A checklist of NOTAM shall have the same distribution as the actual message series to which they refer and shall be clearly identified as a checklist.

Editorial Note.— 5.2.5.3.4 is relocated text from Annex 15, 5.2.13.2

5.3 Digital Data

5.3.1 General provisions

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

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

Editorial Note.— 5.3.1.1 and Note is relocated text from Annex 15, 11.2.1

5.3.1.2 A comprehensive statement of available electronic terrain and obstacle data sets shall be provided in the form of terrain data product specifications as well as obstacle data product specifications on which basis air navigation users will be able to evaluate the products and determine whether they fulfil the requirements for their intended use (application).

Note 1.— ISO Standard 19131 specifies the requirements and outline of data product specifications for geographic information.

Editorial Note.— 5.3.1.2 and Note 1 are relocated text from Annex 15, 10.4.2

Note 2.— This includes an overview, specification scope, data product identification, data content and structure, reference system, data quality, data capture, data maintenance, data portrayal, data product delivery, additional information, and metadata.

Editorial Note.— Note 2 is relocated text from Annex 15, Note to 11.2.2

5.3.1.3 The aeronautical information model used should encompass the aeronautical data and aeronautical information to be exchanged.

Editorial Note.— 5.3.1.3 is relocated text from Annex 15, 3.6.4

5.3.1.4 The aeronautical information model used should:

- a) use the Unified Modelling Language (UML) to describe the aeronautical information features and their properties, associations and data types;
- b) include data value constraints and data verification rules;
- c) include provisions for metadata as specified in 3.4.2; and
- d) include a temporality model to enable capturing the evolution of the properties of an aeronautical information feature during its life cycle.

Editorial Note.— 5.3.1.4 is relocated text from Annex 15, 3.6.5

5.3.1.5 The aeronautical data exchange model used should:

- a) apply a commonly used data encoding format;
- b) cover all the classes, attributes, data types and associations of the aeronautical information model detailed in 3.6.5; and
- c) provide an extension mechanism by which groups of users can extend the properties of existing features and add new features which do not adversely affect global standardization.

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

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

Editorial Note.— 5.3.1.5, Notes 1 and 2 are relocated text from Annex 15, 3.6.6

5.3.2 Metadata

5.3.2.1 – New text

5.3.3 Data sets

Note. – New text

5.3.3.1 Aeronautical (AIP) data set

Note. – New text

5.3.3.1.1 – New text

Note 1. – New text

Note 2. – New text

5.3.3.1.2 – New text

5.3.3.2 Terrain and obstacle data sets

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

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

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

Editorial Note.— Note to 5.3.3.2 is relocated text from Annex 15, Chapter 10

5.3.3.2.1 Terrain data set

5.3.3.2.1.1 A terrain grid shall be angular or linear and shall be of regular or irregular shape.

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

Editorial Note.— 5.3.3.2.1.1 and Note are relocated text from Annex 15, 10.2.1

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

Editorial Note.— 5.3.3.2.1.2 is relocated text from Annex 15, 10.2.2

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

Editorial Note.— 5.3.3.2.1.2 is relocated text from Annex 15, 10.2.3

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

Editorial Note.— 5.3.3.2.1.2 is relocated text from Annex 15, 10.2.4

5.3.3.2.2 Obstacle data set

5.3.3.2.2.1 Obstacle data elements are features that shall be represented in the data sets by points, lines or polygons.

Editorial Note.— 5.3.3.2.2.1 is relocated text from Annex 15, 10.3.1

5.3.3.2.2.2 In an obstacle data set, all defined obstacle feature types shall be provided and each of them shall be described according to the list of mandatory attributes provided in Appendix 8, Table A8-4.

Note.— By definition, obstacles can be fixed (permanent or temporary) or mobile. Specific attributes associated with mobile (feature operations) and temporary types of obstacles are annotated in Appendix 8, Table A8-4, as optional attributes. If these types of obstacles are to be provided in the data set, appropriate attributes describing such obstacles are also required.

Editorial Note.— 5.3.3.2.2.2 and Note are relocated text from Annex 15, 10.3.2

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

Editorial Note.— 5.3.3.2.2.3 is relocated text from Annex 15, 10.3.3

5.3.3.2.2.4 The obstacle data product specification, supported by geographical coordinates for each aerodrome included within the dataset, shall describe the following areas:

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

Editorial Note.— 5.3.3.2.4 is relocated text from Annex 15, 10.4.10

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

Editorial Note.— Note to 5.3.3.2.4 is relocated text from Annex 15, Note to 10.1.9

5.3.3.3 Aerodrome mapping data sets

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

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

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

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

Editorial Note.— Notes 1 and 2 to 5.3.3.3 are relocated text from Annex 15, Chapter 11

Note 3.— **New text**

Note 4.— Metadata elements applicable to aerodrome mapping data are contained in RTCA Document DO-291B and European Organization for Civil Aviation Equipment (EUROCAE) Document ED-119B — Interchange Standards for Terrain, Obstacle, and Aerodrome Mapping Data.

Editorial Note.— Note 4 to 5.3.3.3 is relocated text from Annex 15, Note to 11.3.3

5.3.3.3.1 Aerodrome mapping data — requirements for provision

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

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

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

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

Editorial Note.— 5.3.3.3.1 .1 and Notes are relocated text from Annex 15, 11.1.1

5.3.3.3.2 Aerodrome mapping data product specification

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

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

Editorial Note.— 5.3.3.3.2.1 and Note are relocated text from Annex 15, 11.2.1

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

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

Editorial Note.— 5.3.3.3.2.2 and Note are relocated text from Annex 15, 11.2.2

5.3.3.3.3 Aerodrome mapping database — data set content and structure

5.3.3.3.3.1 The content and structure of aerodrome mapping data sets shall be defined in terms of an application schema and a feature catalogue.

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

Editorial Note.— 5.3.3.3.1 and Note are relocated text from Annex 15, 11.3.1

5.3.3.4 Instrument flight procedure design data set

5.3.3.4.1 – New text

Note 1. – New text

Note 2. – New text

5.4 Distribution Services

5.4.1 General

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

- a) Physical distribution. The means by which aeronautical data and aeronautical information distribution is achieved through the delivery of a physical package, such as postal services; or
- b) 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.

Editorial Note.— 5.4.1.1 is relocated text from Annex 15, Note 3 to 3.3.3.2

5.4.1.2 Different delivery methods and data media may require different procedures to ensure the required data quality.

Editorial Note.— 5.4.1.2 is relocated text from Annex 15, Note 4 to 3.3.3.2

Note. – New text

5.4.1.3. – New text

5.4.1.4 – New text

5.4.2 NOTAM distribution

5.4.2.1 An aeronautical information service shall arrange, as necessary, to satisfy operational requirements for the issuance and receipt of NOTAM distributed by telecommunication.

Note.— Arrangements may be made for direct exchange of SNOWTAM (see Appendix 2) between aerodromes/heliports.

Editorial Note.— 5.4.2.1 is relocated text from Annex 15, 2.3.3 and the Note is relocated text from Annex 15, Note to 5.3.4

5.4.2.2 The international exchange of ASHTAM (see 5.2.4), and NOTAM where States continue to use NOTAM for distribution of information on volcanic activity, shall include volcanic ash advisory centres and the centres designated by regional air navigation agreement for the operation of AFS satellite distribution systems (satellite distribution system for information relating to air navigation (SADIS) and international satellite communications system (ISCS)), and shall take account of the requirements of long-range operations.

Editorial Note.— 5.4.2.2 is relocated text from Annex 15, 5.3.4

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

Editorial Note.— 5.4.2.3 is relocated text from Annex 15, 5.3.4.1

5.4.2.4 A predetermined distribution system for NOTAM transmitted on the AFS in accordance with Appendix 5 shall be used whenever possible, subject to the requirements of 5.3.4.

Editorial Note.— 5.4.2.4 is relocated text from Annex 15, 5.3.4.2

5.4.2.5 The originating State shall select the NOTAM that are to be given international distribution.

Editorial Note.— 5.4.2.5 is relocated text from Annex 15, 5.3.3

5.5 Pre-flight information services

5.5.1– New text

5.5.2– New text

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

Editorial Note.— 5.5.3 is relocated text from Annex 15, 8.2.1

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

Editorial Note.— 5.5.4 is relocated text from Annex 15, 8.2.2

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

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

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

Editorial Note.— 5.5.5 is relocated text from Annex 15, 8.2.3 and Note to 8.2.3

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

Editorial Note.— 5.5.6 is relocated text from Annex 15, 8.2.4

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

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

Editorial Note.— 5.5.7 is relocated text from Annex 15, 8.2.5 and Note to 8.2.5

CHAPTER 6 - AERONAUTICAL INFORMATION UPDATES

6.1 Aeronautical Information Product updates

6.1.1— New text

6.1.2 Specifications for AIP Amendments

6.1.2.1 The regular interval referred to in 4.2.9 shall be specified in the AIP, Part 1 — General (GEN).

Note. — Guidance material on the establishment of intervals between publication dates of AIP Amendments is contained in Doc 8126.

Editorial Note.— 6.1.2.1 is relocated text from Annex 15, 4.2.9.1 and Note to 4.2.9.1.

6.1.2.2 When an AIP Amendment will not be published at the established interval or publication date, a NIL notification shall be originated and distributed by the monthly plain-language list of valid NOTAM required by 5.2.13.3.

Editorial Note.— 6.1.2.2 is relocated text from Annex 15, 4.3.7

6.1.2.3 – New text

6.1.2.4 – New text

6.1.3 Specifications for AIP Supplements

6.1.3.1 When an error occurs in an AIP Supplement or when the period of validity of an AIP Supplement is changed, a new AIP Supplement shall be published as a replacement.

Note 1.— The requirements for NOTAM apply when time constraints do not allow sufficient time for the distribution of an AIP Supplement.

Editorial Note.— 6.1.3.1 is relocated text from Annex 15, 4.4.4 and Note to 4.4.4

Note 2.— Guidance material on the use of AIP Supplements together with examples of such use is contained in Doc 8126.

Editorial Note.— Note 2 is relocated text from Annex 15, Note to 4.4.1

6.1.4 Specifications for NOTAM

6.1.4.1 – New text

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

Editorial Note.— 6.1.4.2 is relocated text from Annex 15, 5.1.1.5

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

Editorial Note.— 6.1.4.3 is relocated text from Annex 15, 5.1.1.4

6.1.4.4 Notice of any subsequent cancellation of the activities or any reduction of the hours of activity or the dimensions of the airspace should be given as soon as possible.

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

Editorial Note.— 6.1.4.4 is relocated text from Annex 15, 5.1.1.4.1 and Note to 5.1.1.4.1

6.1.4.5 – New text

6.1.4.6 – New text

6.1.4.7 – New text

6.1.4.8 When an AIP Amendment or an AIP Supplement is published in accordance with AIRAC procedures, a NOTAM shall be originated giving a brief description of the contents, the effective date and time, and the reference number of the amendment or supplement.

Editorial Note.— 6.1.4.8 is relocated text from Annex 15, 5.1.1.6

6.1.4.9 This NOTAM shall come into force on the same effective date and time as the amendment or supplement and shall remain valid in the pre-flight information bulletin for a period of fourteen days.

Editorial Note.— 6.1.4.9 is relocated text from Annex 15, 5.1.1.6

6.1.4.10 – New text

6.1.4.11 – New text

6.1.4.12 – New text

Note.— Guidance material for the origination of NOTAM announcing the existence of AIRAC AIP Amendments or AIP Supplements ("Trigger NOTAM") is contained in the Aeronautical Information Services Manual (Doc 8126).

Editorial Note.— Note to 6.1.4.12 is relocated text from Annex 15, Note to 5.1.1.6

6.1.5 Specifications for digital data updates

6.1.5.1– New text

6.1.5.2– New text

APPENDIX 1. AERONAUTICAL DATA CATALOGUE

New text

APPENDIX 2. CONTENTS OF THE AERONAUTICAL INFORMATION PUBLICATION (AIP)

Note 1. – New text

Note 2. – New text

PART 1 — GENERAL (GEN)

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

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

GEN 0.1 Preface

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

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

GEN 0.2 Record of AIP Amendments

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

- 1) amendment number;
- 2) publication date;
- 3) date inserted (for the AIRAC AIP Amendments, effective date); and

- 4) initials of officer who inserted the amendment.

GEN 0.3 Record of AIP Supplements

A record of issued AIP Supplements containing:

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

GEN 0.4 Checklist of AIP pages

A checklist of AIP pages containing:

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

GEN 0.5 List of hand amendments to the AIP

A list of current hand amendments to the AIP containing:

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

GEN 0.6 Table of contents to Part 1

A list of sections and subsections contained in Part 1 — General (GEN).

Note.— Subsections may be listed alphabetically.

GEN 1. NATIONAL REGULATIONS AND REQUIREMENTS

GEN 1.1 Designated authorities

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

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

GEN 1.2 Entry, transit and departure of aircraft

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

GEN 1.3 Entry, transit and departure of passengers and crew

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

GEN 1.4 Entry, transit and departure of cargo

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

Note.— Provisions for facilitating entry and departure for search, rescue, salvage, investigation, repair or salvage in connection with lost or damaged aircraft are detailed in section GEN 3.6, Search and rescue.

GEN 1.5 Aircraft instruments, equipment and flight documents

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

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

GEN 1.6 Summary of national regulations and international agreements/conventions

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

GEN 1.7 Differences from ICAO Standards, Recommended Practices and Procedures

A list of significant differences between national regulations and practices of the State and related ICAO provisions, including:

- 1) provision affected (Annex and edition number, paragraph); and
- 2) difference in full text.

All significant differences must be listed under this subsection. All Annexes must be listed in numerical order even if there is no difference to an Annex, in which case a NIL notification must be provided. National differences or the degree of non-application of the regional supplementary procedures (SUPPs) must be notified immediately following the Annex to which the supplementary procedure relates.

GEN 2. TABLES AND CODES

GEN 2.1 Measuring system, aircraft markings, holidays

GEN 2.1.1 Units of measurement

Description of units of measurement used including table of units of measurement.

GEN 2.1.2 Temporal reference system

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

GEN 2.1.3 Horizontal reference system

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

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

GEN 2.1.4 Vertical reference system

Brief description of the vertical reference system used, including:

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

GEN 2.1.5 Aircraft nationality and registration marks

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

GEN 2.1.6 Public holidays

A list of public holidays with indication of services being affected.

GEN 2.2 Abbreviations used in AIS publications

A list of alphabetically arranged abbreviations and their respective significations used by the State in its AIP and in the distribution of aeronautical data and aeronautical information with appropriate annotation for those national abbreviations that are different from those contained in the *Procedures for Air*

Navigation Services — ICAO Abbreviations and Codes (PANS-ABC, Doc 8400).

Note.— A list of alphabetically arranged definitions/glossary of terms may also be added.

GEN 2.3 Chart symbols

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

GEN 2.4 Location indicators

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

GEN 2.5 List of radio navigation aids

A list of radio navigation aids arranged alphabetically, containing:

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

GEN 2.6 Conversion of units of measurement

Tables for conversion or, alternatively, conversion formulae between:

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

GEN 2.7 Sunrise/sunset

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

- 1) station name;

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

GEN 3. SERVICES

GEN 3.1 Aeronautical information services

GEN 3.1.1 Responsible service

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

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

GEN 3.1.2 Area of responsibility

The area of responsibility for the aeronautical information service.

GEN 3.1.3 Aeronautical publications

Description of the elements of the Integrated Aeronautical Information Package, including:

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

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

GEN 3.1.4 AIRAC system

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

GEN 3.1.5 Pre-flight information service at aerodromes/heliports

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

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

GEN 3.1.6 New text

- 1) New text
- 2) New text

GEN 3.2 Aeronautical charts

GEN 3.2.1 Responsible service(s)

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

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

GEN 3.2.2 Maintenance of charts

Brief description of how aeronautical charts are revised and amended.

GEN 3.2.3 Purchase arrangements

Details of how charts may be obtained, containing:

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

GEN 3.2.4 Aeronautical chart series available

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

GEN 3.2.5 List of aeronautical charts available

A list of aeronautical charts available, including:

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

GEN 3.2.6 Index to the World Aeronautical Chart (WAC) — ICAO 1:1 000 000

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

GEN 3.2.7 Topographical charts

Details of how topographical charts may be obtained, containing:

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

GEN 3.2.8 Corrections to charts not contained in the AIP

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

GEN 3.3 Air traffic services

GEN 3.3.1 Responsible service

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

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

GEN 3.3.2 Area of responsibility

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

GEN 3.3.3 Types of services

Brief description of main types of air traffic services provided.

GEN 3.3.4 Coordination between the operator and ATS

General conditions under which coordination between the operator and air traffic services is effected.

GEN 3.3.5 Minimum flight altitude

The criteria used to determine minimum flight altitudes.

GEN 3.3.6 ATS units address list

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

- 1) unit name;
- 2) postal address;
- 3) telephone number;

- 4) telefax number;
- 5) e-mail address;
- 6) AFS address; and
- 7) website address, if available.

GEN 3.4 Communication services

GEN 3.4.1 Responsible service

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

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

GEN 3.4.2 Area of responsibility

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

GEN 3.4.3 Types of service

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

- 1) radio navigation services;
- 2) voice and/or data link services;

- 3) broadcasting service;
- 4) language(s) used; and
- 5) an indication of where detailed information can be obtained.

GEN 3.4.4 Requirements and conditions

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

GEN 3.4.5 Miscellaneous

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

GEN 3.5 Meteorological services

GEN 3.5.1 Responsible service

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

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

GEN 3.5.2 Area of responsibility

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

GEN 3.5.3 Meteorological observations and reports

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

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

GEN 3.5.4 Types of services

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

GEN 3.5.5 Notification required from operators

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

GEN 3.5.6 Aircraft reports

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

GEN 3.5.7 VOLMET service

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

- 1) name of transmitting station;
- 2) call sign or identification and abbreviation for the radio communication emission;
- 3) frequency or frequencies used for broadcast;
- 4) broadcasting period;
- 5) hours of service;

- 6) list of aerodromes/heliports for which reports and/or forecasts are included; and
- 7) reports, forecasts and SIGMET information included and remarks.

GEN 3.5.8 SIGMET and AIRMET service

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

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

GEN 3.5.9 Other automated meteorological services

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

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

GEN 3.6 Search and rescue

GEN 3.6.1 Responsible service(s)

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

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

GEN 3.6.2 Area of responsibility

Brief description of area of responsibility within which search and rescue services are provided.

Note.— A chart may be included to supplement the description of the area.

GEN 3.6.3 Types of service

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

GEN 3.6.4 SAR agreements

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

GEN 3.6.5 Conditions of availability

Brief description of provisions for search and rescue, including the general conditions under which the service and facilities are available for international use, including an indication of whether a facility available for search and rescue is specialized in SAR techniques and functions, or is specially used for

other purposes but adapted for SAR purposes by training and equipment, or is only occasionally available and has no particular training or preparation for SAR work.

GEN 3.6.6 Procedures and signals used

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

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

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

GEN 4.1 Aerodrome/heliport charges

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

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

GEN 4.2 Air navigation services charges

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

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

PART 2 — EN-ROUTE (ENR)

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

ENR 0.6 Table of contents to Part 2

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

Note.— Subsections may be listed alphabetically.

ENR 1. GENERAL RULES AND PROCEDURES

ENR 1.1 General rules

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

ENR 1.2 Visual flight rules

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

ENR 1.3 Instrument flight rules

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

ENR 1.4 ATS airspace classification and description

ENR 1.4.1 ATS airspace classification

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

ENR 1.4.2 ATS airspace description

Other ATS airspace descriptions as applicable, including general textual descriptions.

ENR 1.5 Holding, approach and departure procedures

ENR 1.5.1 General

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

ENR 1.5.2 Arriving flights

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

ENR 1.5.3 Departing flights

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

ENR 1.5.4 Other relevant information and procedures

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

ENR 1.6 ATS surveillance services and procedures

ENR 1.6.1 Primary radar

Description of primary radar services and procedures, including:

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

ENR 1.6.2 Secondary surveillance radar (SSR)

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

- 1) emergency procedures;

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

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

ENR 1.6.3 Automatic dependent surveillance — broadcast (ADS-B)

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

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

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

ENR 1.6.4 Other relevant information and procedures

Brief description of additional information and procedures, e.g. radar failure procedures and transponder failure procedures.

ENR 1.7 Altimeter setting procedures

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

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

ENR 1.8 Regional supplementary procedures

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

ENR 1.9 Air traffic flow management and airspace management

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

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

ENR 1.10 Flight planning

The requirement is to indicate any restriction, limitation or advisory information related to the flight planning stage which may assist the user in the presentation of the intended flight operation, including:

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

ENR 1.11 Addressing of flight plan messages

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

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

ENR 1.12 Interception of civil aircraft

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

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

ENR 1.13 Unlawful interference

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

ENR 1.14 Air traffic incidents

Description of air traffic incidents reporting system, including:

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

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

ENR 2. AIR TRAFFIC SERVICES AIRSPACE

ENR 2.1 FIR, UIR, TMA AND CTA

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

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

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

121.5 MHz is required, a statement to this effect must be included for the relevant area(s) or portion(s) thereof.

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

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

ENR 2.2 Other regulated airspace

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

ENR 3. ATS ROUTES

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

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

Note 3.— Guidance material on the organization of ATS Route publication is contained in the Aeronautical Information Services Manual (Doc 8126).

ENR 3.1 Lower ATS routes

Detailed description of lower ATS routes, including:

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

- 7) remarks, including an indication of the controlling unit, its operating channel and, if applicable, its logon address, SATVOICE number, and any navigation, RCP and RSP specification(s) limitations.

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

ENR 3.2 Upper ATS routes

Detailed description of upper ATS routes, including:

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

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

ENR 3.3 Area navigation routes

Detailed description of PBN (RNAV and RNP) routes, including:

- 1) route designator, designation of the required communication performance (RCP) specification(s), navigation specification(s) and/or required surveillance performance (RSP) specification(s) applicable to a specified segment(s), names, coded designators or name-codes and the geographical coordinates in degrees, minutes and seconds of all significant points defining the route including “compulsory” or “on-request” reporting points;
- 2) in respect of waypoints defining an area navigation route, additionally as applicable:
 - a) station identification of the reference VOR/DME;

- b) bearing to the nearest degree and the distance to the nearest tenth of a kilometre or tenth of a nautical mile from the reference VOR/DME, if the waypoint is not collocated with it; and
- c) elevation of the transmitting antenna of DME to the nearest 30 m (100 ft);
- 3) magnetic bearing to the nearest degree, geodesic distance to the nearest tenth of a kilometre or tenth of a nautical mile between defined end-points and distance between each successive designated significant point;
- 4) upper and lower limits and airspace classification;
- 5) direction of cruising levels;
- 6) the navigation accuracy requirement for each PBN (RNAV or RNP) route segment; and
- 7) remarks, including an indication of the controlling unit, its operating channel and, if applicable, its logon address, SATVOICE number, and any navigation, RCP and RSP specification(s) limitations.

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

ENR 3.4 Helicopter routes

Detailed description of helicopter routes, including:

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

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

ENR 3.5 Other routes

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

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

ENR 3.6 En-route holding

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

- 1) holding identification (if any) and holding fix (navigation aid) or waypoint with geographical coordinates in degrees, minutes and seconds;
- 2) inbound track;
- 3) direction of the procedure turn;
- 4) maximum indicated airspeed;
- 5) minimum and maximum holding level;
- 6) time/distance outbound; and
- 7) indication of the controlling unit and its operating frequency.

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

ENR 4. RADIO NAVIGATION AIDS/SYSTEMS

ENR 4.1 Radio navigation aids — en-route

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

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

6) elevation of the transmitting antenna of DME to the nearest 30 m (100 ft); and

7) remarks.

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

ENR 4.2 Special navigation systems

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

1) name of station or chain;

2) type of service available (master signal, slave signal, colour);

3) frequency (channel number, basic pulse rate, recurrence rate, as applicable);

4) hours of operation;

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

6) remarks.

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

ENR 4.3 Global navigation satellite system (GNSS)

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

1) the name of the GNSS element (GPS, GLONASS, EGNOS, MSAS, WAAS, etc.);

2) frequency(ies), as appropriate;

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

4) remarks.

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

ENR 4.4 Name-code designators for significant points

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

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

ENR 4.5 Aeronautical ground lights — en-route

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

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

ENR 5. NAVIGATION WARNINGS

ENR 5.1 Prohibited, restricted and danger areas

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

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

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

ENR 5.2 Military exercise and training areas and air defence identification zone (ADIZ)

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

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

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

ENR 5.3.1 Other activities of a dangerous nature

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

- 1) geographical coordinates in degrees and minutes of centre of area and range of influence;
- 2) vertical limits;
- 3) advisory measures;
- 4) authority responsible for the provision of information; and
- 5) remarks, including time of activity.

ENR 5.3.2 Other potential hazards

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

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

ENR 5.4 Air navigation obstacles

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

- 1) obstacle identification or designation;
- 2) type of obstacle;
- 3) obstacle position, represented by geographical coordinates in degrees, minutes and seconds;

- 4) obstacle elevation and height to the nearest metre or foot;
- 5) type and colour of obstacle lighting (if any); and
- 6) if appropriate, an indication that the list of obstacles is available in electronic form, and a reference to GEN 3.1.6.

Note 1.— An obstacle whose height above the ground is 100 m and higher is considered an obstacle for Area 1.

Note 2.— Specifications governing the determination and reporting (accuracy of field work and data integrity) of positions (latitude and longitude) and elevations/heights for obstacles in Area 1 are given in Annex 11, Appendix 5, Tables 1 and 2, respectively.

ENR 5.5 Aerial sporting and recreational activities

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

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

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

ENR 5.6 Bird migration and areas with sensitive fauna

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

ENR 6. EN-ROUTE CHARTS

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

PART 3 — AERODROMES (AD)

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

entered against each of the above subsections.

AD 0.6 Table of contents to Part 3

A list of sections and subsections contained in Part 3 — Aerodromes (AD).

Note.— Subsections may be listed alphabetically.

AD 1. AERODROMES/HELIPORTS — INTRODUCTION

AD 1.1 Aerodrome/heliport availability and conditions of use

AD 1.1.1 General conditions

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

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

AD 1.1.2 Use of military air bases

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

AD 1.1.3 Low visibility procedures (LVP)

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

AD 1.1.4 Aerodrome operating minima

Details of aerodrome operating minima applied by the State.

AD 1.1.5 Other information

If applicable, other information of a similar nature.

AD 1.2 Rescue and firefighting services and snow plan

AD 1.2.1 Rescue and firefighting services

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

AD 1.2.2 Snow plan

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

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

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

AD 1.3 Index to aerodromes and heliports

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

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

AD 1.4 Grouping of aerodromes/heliports

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

AD 1.5 Status of certification of aerodromes

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

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

AD 2. AERODROMES

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

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

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

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

The requirement is for aerodrome geographical and administrative data including:

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

****** AD 2.3 Operational hours**

Detailed description of the hours of operation of services at the aerodrome, including:

- 1) aerodrome operator;
- 2) customs and immigration;

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

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

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

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

****** AD 2.5 Passenger facilities**

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

- 1) hotel(s) at or in the vicinity of aerodrome;
- 2) restaurant(s) at or in the vicinity of aerodrome;
- 3) transportation possibilities;
- 4) medical facilities;

5) bank and post office at or in the vicinity of aerodrome;

6) tourist office; and

7) remarks.

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

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

1) aerodrome category for firefighting;

2) rescue equipment;

3) capability for removal of disabled aircraft; and

4) remarks.

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

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

1) type(s) of clearing equipment;

2) clearance priorities; and

3) remarks.

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

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

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

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

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

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

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

****** AD 2.10 Aerodrome obstacles**

Detailed description of obstacles, including:

- 1) obstacles in Area 2:
 - a) obstacle identification or designation;
 - b) type of obstacle;
 - c) obstacle position, represented by geographical coordinates in degrees, minutes, seconds and tenths of seconds;
 - d) obstacle elevation and height to the nearest metre or foot;

- e) obstacle marking, and type and colour of obstacle lighting (if any);
- f) if appropriate, an indication that the list of obstacles is available in electronic form, and a reference to GEN 3.1.6; and
- g) NIL indication, if appropriate.

Note 1.— Chapter 10, 10.1.1, provides a description of Area 2 while Appendix 8, Figure A8-2, contains graphical illustrations of obstacle data collection surfaces and criteria used to identify obstacles in Area 2.

Note 2.— Specifications governing the determination and reporting (accuracy of field work and data integrity) of positions (latitude and longitude) and elevations for obstacles in Area 2 are given in Annex 11, Appendix 5, Tables 1 and 2, and in Annex 14, Volume I, Appendix 5, Tables A5-1 and A5-2, respectively.

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

Note 1.— Chapter 10, 10.1.1, provides a description of Area 3 while Appendix 8, Figure A8-3, contains graphical illustrations of obstacle data collection surfaces and criteria used to identify obstacles in Area 3.

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

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

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

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

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

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

- 1) designations;
- 2) true bearings to one-hundredth of a degree;
- 3) dimensions of runways to the nearest metre or foot;
- 4) strength of pavement (PCN and associated data) and surface of each runway and associated stopways;
- 5) geographical coordinates in degrees, minutes, seconds and hundredths of seconds for each threshold and runway end and, where appropriate, geoid undulation of:
 - thresholds of a non-precision approach runway to the nearest metre or foot; and
 - thresholds of a precision approach runway to the nearest tenth of a metre or tenth of a foot;
- 6) elevations of:
 - thresholds of a non-precision approach runway to the nearest metre or foot; and

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

- 7) slope of each runway and associated stopways;
- 8) dimensions of stopway (if any) to the nearest metre or foot;
- 9) dimensions of clearway (if any) to the nearest metre or foot;
- 10) dimensions of strips;
- 11) dimensions of runway end safety areas;
- 12) location (which runway end) and description of arresting system (if any);
- 13) the existence of an obstacle-free zone; and
- 14) remarks.

****** AD 2.13 Declared distances**

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

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

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

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

Detailed description of approach and runway lighting, including:

- 1) runway designator;
- 2) type, length and intensity of approach lighting system;
- 3) runway threshold lights, colour and wing bars;

- 4) type of visual approach slope indicator system;
- 5) length of runway touchdown zone lights;
- 6) length, spacing, colour and intensity of runway centre line lights;
- 7) length, spacing, colour and intensity of runway edge lights;
- 8) colour of runway end lights and wing bars;
- 9) length and colour of stopway lights; and
- 10) remarks.

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

Description of other lighting and secondary power supply, including:

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

****** AD 2.16 Helicopter landing area**

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

- 1) geographical coordinates in degrees, minutes, seconds and hundredths of seconds and, where appropriate, geoid undulation of the geometric centre of touchdown and lift-off (TLOF) or of each threshold of final approach and take-off (FATO) area:
 - for non-precision approaches, to the nearest metre or foot; and
 - for precision approaches, to the nearest tenth of a metre or tenth of a foot;
- 2) TLOF and/or FATO area elevation:
 - for non-precision approaches, to the nearest metre or foot; and
 - for precision approaches, to the nearest tenth of a metre or tenth of a foot;
- 3) TLOF and FATO area dimensions to the nearest metre or foot, surface type, bearing strength and marking;

- 4) true bearings to one-hundredth of a degree of FATO;
- 5) declared distances available, to the nearest metre or foot;
- 6) approach and FATO lighting; and
- 7) remarks.

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

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

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

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

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

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

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

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

- 1) type of aids, magnetic variation to the nearest degree, as appropriate, and type of supported operation for ILS/MLS, basic GNSS, SBAS, and GBAS and for VOR/ILS/MLS also station declination to the nearest degree used for technical line-up of the aid;
- 2) identification, if required;
- 3) frequency(ies), channel number(s), service provider, and reference path identifier(s) (RPI), as appropriate;
- 4) hours of operation, as appropriate;
- 5) geographical coordinates in degrees, minutes, seconds and tenths of seconds of the position of the transmitting antenna, as appropriate;
- 6) elevation of the transmitting antenna of DME to the nearest 30 m (100 ft) and of DME/P to the nearest 3 m (10 ft), elevation of GBAS reference point to the nearest metre or foot, and the ellipsoid height of the point to the nearest metre or foot. For SBAS, the ellipsoid height of the landing threshold point (LTP) or the fictitious threshold point (FTP) to the nearest metre or foot;
- 7) service volume radius from the GBAS reference point to the nearest kilometre or nautical mile; and
- 8) remarks.

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

****** AD 2.20 Local aerodrome regulations**

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

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

Detailed description of noise abatement procedures established at the aerodrome.

****** AD 2.22 Flight procedures**

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

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

****** AD 2.23 Additional information**

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

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

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

- 1) Aerodrome/Heliport Chart — ICAO;
- 2) Aircraft Parking/Docking Chart — ICAO;
- 3) Aerodrome Ground Movement Chart — ICAO;
- 4) Aerodrome Obstacle Chart — ICAO Type A (for each runway);
- 5) Aerodrome Terrain and Obstacle Chart — ICAO (Electronic);
- 6) Precision Approach Terrain Chart — ICAO (precision approach Cat II and III runways);
- 7) Area Chart — ICAO (departure and transit routes);
- 8) Standard Departure Chart — Instrument — ICAO;
- 9) Area Chart — ICAO (arrival and transit routes);
- 10) Standard Arrival Chart — Instrument — ICAO;
- 11) ATC Surveillance Minimum Altitude Chart — ICAO;
- 12) Instrument Approach Chart — ICAO (for each runway and procedure type);
- 13) Visual Approach Chart — ICAO; and
- 14) bird concentrations in the vicinity of the aerodrome.

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

Note.— A page pocket may be used in the AIP to include the Aerodrome Terrain and Obstacle Chart — ICAO (Electronic) on appropriate electronic media.

AD 3. HELIPORTS

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

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

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

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

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

The requirement is for heliport geographical and administrative data, including:

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

****** AD 3.3 Operational hours**

Detailed description of the hours of operation of services at the heliport, including:

- 1) heliport operator;
- 2) customs and immigration;
- 3) health and sanitation;
- 4) AIS briefing office;
- 5) ATS reporting office (ARO);

- 6) MET briefing office;
- 7) air traffic service;
- 8) fuelling;
- 9) handling;
- 10) security;
- 11) de-icing; and
- 12) remarks.

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

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

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

****** AD 3.5 Passenger facilities**

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

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

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

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

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

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

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

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

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

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

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

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

****** AD 3.9 Markings and markers**

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

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

****** AD 3.10 Heliport obstacles**

Detailed description of obstacles, including:

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

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

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

- 1) name of the associated meteorological office;
- 2) hours of service and, where applicable, the designation of the responsible meteorological office outside these hours;
- 3) office responsible for preparation of TAFs, and periods of validity of the forecasts;
- 4) availability of the trend forecasts for the heliport, and interval of issuance;
- 5) information on how briefing and/or consultation is provided;
- 6) type of flight documentation supplied and language(s) used in flight documentation;
- 7) charts and other information displayed or available for briefing or consultation;
- 8) supplementary equipment available for providing information on meteorological conditions, e.g.

weather radar and receiver for satellite images;

9) the air traffic services unit(s) provided with meteorological information; and

10) additional information (e.g. concerning any limitation of service, etc.).

****** AD 3.12 Heliport data**

Detailed description of heliport dimensions and related information, including:

1) heliport type — surface-level, elevated or helideck;

2) touchdown and lift-off (TLOF) area dimensions to the nearest metre or foot;

3) true bearings to one-hundredth of a degree of final approach and take-off (FATO) area;

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

5) surface and bearing strength in tonnes (1 000 kg) of TLOF;

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

— for non-precision approaches, to the nearest metre or foot; and

— for precision approaches, to the nearest tenth of a metre or tenth of a foot;

7) TLOF and/or FATO slope and elevation:

— for non-precision approaches, to the nearest metre or foot; and

— for precision approaches, to the nearest tenth of a metre or tenth of a foot;

8) dimensions of safety area;

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

10) the existence of an obstacle-free sector; and

11) remarks.

****** AD 3.13 Declared distances**

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

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

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

Detailed description of approach and FATO lighting, including:

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

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

Description of other lighting and secondary power supply, including:

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

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

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

- 1) airspace designation and geographical coordinates in degrees, minutes and seconds of the lateral

limits;

- 2) vertical limits;
- 3) airspace classification;
- 4) call sign and language(s) of ATS unit providing service;
- 5) transition altitude;
- 6) hours of applicability; and
- 7) remarks.

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

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

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

****** AD 3.18 Radio navigation and landing aids**

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

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

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

****** AD 3.19 Local heliport regulations**

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

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

Detailed description of noise abatement procedures established at the heliport.

****** AD 3.21 Flight procedures**

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

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

****** AD 3.22 Additional information**

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

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

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

- 1) Aerodrome/Heliport Chart — ICAO;
- 2) Area Chart — ICAO (departure and transit routes);
- 3) Standard Departure Chart — Instrument — ICAO;

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

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

Editorial Note.— Appendix 3 is relocated text from Appendix 1 to Annex 15.

***Delete as appropriate**

INSTRUCTIONS FOR THE COMPLETION OF THE NOTAM FORMAT

1. General

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

2. NOTAM numbering

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

3. Qualifiers (Item Q)

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

1) FIR

a) If the subject of the information is located geographically within one FIR, the ICAO location indicator shall be that of the FIR concerned. When an aerodrome is situated within the overlying FIR of another State, the first field of Item Q) shall contain the code for that overlying FIR (e.g. Q) LFRR/...A) EGJJ);

or,

if the subject of the information is located geographically within more than one FIR, the FIR field shall be composed of the ICAO nationality letters of the State originating the NOTAM followed by "XX". (The location indicator of the overlying UIR shall not be used). The ICAO location indicators of the FIRs concerned shall then be listed in Item A) or indicator of State or non-governmental agency which is responsible for provision of a navigation service in more than one State.

b) If one State issues a NOTAM affecting FIRs in a group of States, the first two letters of the ICAO location indicator of the issuing State plus "XX" shall be included. The location indicators of the FIRs concerned shall then be listed in Item A) or indicator of State or non-governmental agency which is responsible for provision of a navigation service in more than one State.

2) NOTAM CODE

All NOTAM Code groups contain a total of five letters and the first letter is always the letter Q. The second and third letters identify the subject, and the fourth and fifth letters denote the status or

condition of the subject reported upon. The two-letter codes for subjects and conditions are those contained in the PANS-ABC (Doc 8400). For combinations of second and third, and fourth and fifth letters, refer to the NOTAM Selection Criteria contained in Doc 8126 or insert one of the following combinations, as appropriate:

- a) If the subject is not listed in the NOTAM Code (Doc 8400) or in the NOTAM Selection Criteria (Doc 8126), insert "XX" as the second and third letters (e.g. QXXAK);
- b) If the condition of the subject is not listed in the NOTAM Code (Doc 8400) or in the NOTAM Selection Criteria (Doc 8126), insert "XX" as the fourth and fifth letters (e.g. QFAXX);
- c) When a NOTAM containing operationally significant information is issued in accordance with Appendix 4 and Chapter 6 and when it is used to announce the existence of AIRAC AIP Amendments or Supplements, insert "TT" as the fourth and fifth letters of the NOTAM Code;
- d) When a NOTAM is issued containing a checklist of valid NOTAM, insert "KKKK" as the second, third, fourth and fifth letters; and
- e) The following fourth and fifth letters of the NOTAM Code shall be used in NOTAM cancellations:

<u>AK</u>	<u>=</u>	<u>RESUMED NORMAL OPERATION</u>
<u>AL</u>	<u>=</u>	<u>OPERATIVE (OR RE-OPERATIVE) SUBJECT TO PREVIOUSLY</u> <u>PUBLISHED LIMITATIONS/CONDITIONS</u>
<u>AO</u>	<u>=</u>	<u>OPERATIONAL</u>
<u>CC</u>	<u>=</u>	<u>COMPLETED</u>
<u>CN</u>	<u>=</u>	<u>CANCELLED</u>
<u>HV</u>	<u>=</u>	<u>WORK COMPLETED</u>
<u>XX</u>	<u>=</u>	<u>PLAIN LANGUAGE</u>

Note 1.— As Q - - AO = Operational is used for NOTAM cancellation, NOTAM promulgating new equipment or services use the following fourth and fifth letters Q - - CS = Installed.

Note 2.— Q - - CN = CANCELLED shall be used to cancel planned activities, e.g. navigation warnings; Q - - HV = WORK COMPLETED is used to cancel work in progress.

3) TRAFFIC

<u>I</u>	<u>=</u>	<u>IFR</u>
<u>V</u>	<u>=</u>	<u>VFR</u>
<u>K</u>	<u>=</u>	<u>NOTAM is a checklist</u>

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

4) PURPOSE

N	=	<u>NOTAM selected for the immediate attention of flight crew members</u>
B	=	<u>NOTAM of operational significance selected for PIB entry</u>
O	=	<u>NOTAM concerning flight operations</u>
M	=	<u>Miscellaneous NOTAM; not subject for a briefing, but it is available on request</u>
K	=	<u>NOTAM is a checklist</u>

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

5) SCOPE

A	=	<u>Aerodrome</u>
E	=	<u>En-route</u>
W	=	<u>Nav Warning</u>
K	=	<u>NOTAM is a checklist</u>

Note.— Depending on the NOTAM subject and content, the qualifier field SCOPE may contain combined qualifiers. Guidance concerning the combination of SCOPE qualifiers with subject and conditions in accordance with the NOTAM Selection Criteria is contained in Doc 8126. If the subject is qualified AE, the aerodrome location indicator must be reported in Item A).

6) and 7) LOWER/UPPER

LOWER and UPPER limits shall only be expressed in flight levels (FL) and shall express the actual vertical limits of the area of influence without the addition of buffers. In the case of navigation warnings and airspace restrictions, values entered shall be consistent with those provided under Items F) and G).

If the subject does not contain specific height information, insert “000” for LOWER and “999” for UPPER as default values.

8) COORDINATES, RADIUS

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

4. Item A)

Insert the location indicator as contained in ICAO Doc 7910 of the aerodrome or FIR in which the facility, airspace, or condition being reported on is located. More than one FIR/UIR may be indicated when appropriate. If there is no available ICAO location indicator, use the ICAO nationality letter as given in ICAO Doc 7910, Part 2, plus “XX” and followed up in Item E) by the name, in plain language.

If information concerns GNSS, insert the appropriate ICAO location indicator allocated for a GNSS element or the common location indicator allocated for all elements of GNSS (except GBAS).

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

5. Item B)

For date-time group use a ten-figure group, giving year, month, day, hours and minutes in UTC. This entry is the date-time at which the NOTAMN comes into force. In the cases of NOTAMR and NOTAMC, the date-time group is the actual date and time of the NOTAM origination. The start of a day shall be indicated by “0000”.

6. Item C)

With the exception of NOTAMC, a date-time group (a ten-figure group giving year, month, day, hours and minutes in UTC) indicating duration of information shall be used unless the information is of a permanent nature in which case the abbreviation “PERM” is inserted instead. The end of a day shall be indicated by “2359” (i.e. do not use “2400”). If the information on timing is uncertain, the approximate duration shall be indicated using a date-time group followed by the abbreviation “EST”. Any NOTAM which includes an “EST” shall be cancelled or replaced before the date-time specified in Item C).

7. Item D)

If the hazard, status of operation or condition of facilities being reported on will be active in accordance with a specific time and date schedule between the dates-times indicated in Items B) and C), insert such information under Item D). If Item D) exceeds 200 characters, consideration shall be given to providing such information in a separate, consecutive NOTAM.

Note.— Guidance concerning a harmonized definition of Item D) content is provided in Doc 8126.

8. Item E)

Use decoded NOTAM Code, complemented where necessary by ICAO abbreviations, indicators, identifiers, designators, call signs, frequencies, figures and plain language. When NOTAM is selected for international distribution, English text shall be included for those parts expressed in plain language. This entry shall be clear and concise in order to provide a suitable PIB entry. In the case of NOTAMC, a subject reference and status message shall be included to enable accurate plausibility checks.

2. Items F) and G)

These items are normally applicable to navigation warnings or airspace restrictions and are usually part of the PIB entry. Insert both lower and upper height limits of activities or restrictions, clearly indicating only one reference datum and unit of measurement. The abbreviations GND or SFC shall be used in Item F) to designate ground and surface respectively. The abbreviation UNL shall be used in Item G) to designate unlimited.

Note.— For NOTAM examples see Doc 8126 and the PANS-ABC (Doc 8400).

Editorial Note.— Appendix 4 is relocated text from Appendix 6 to Annex 15.

APPENDIX 4. SNOWTAM FORMAT*(see Chapter 5, 5.2.35)*

(COM heading)	(PRIORITY INDICATOR)		(ADDRESSES)														<≡
	(DATE AND TIME OF FILING)						(ORIGINATOR'S INDICATOR)										<≡
(Abbreviated heading)	(SWAA* SERIAL NUMBER)						(LOCATION INDICATOR)				DATE-TIME OF OBSERVATION						(OPTIONAL GROUP)
	S	W	*	*													<<≡(

SNOWTAM	(Serial number)	<≡
(AERODROME LOCATION INDICATOR)		A) <≡
(DATE-TIME OF OBSERVATION <i>(Time of completion of measurement in UTC)</i>)		B) →
(RUNWAY DESIGNATOR)		C) →
(CLEARED RUNWAY LENGTH, IF LESS THAN PUBLISHED LENGTH <i>(m)</i>)		D) →
(CLEARED RUNWAY WIDTH, IF LESS THAN PUBLISHED WIDTH <i>(m; if offset left or right of centre line add "L" or "R")</i>)		E) →
(DEPOSITS OVER TOTAL RUNWAY LENGTH <i>(Observed on each third of the runway, starting from threshold having the lower runway designation number)</i> NIL — CLEAR AND DRY 1 — DAMP 2 — WET 3 — RIME OR FROST COVERED <i>(depth normally less than 1 mm)</i> 4 — DRY SNOW 5 — WET SNOW 6 — SLUSH 7 — ICE 8 — COMPACTED OR ROLLED SNOW 9 — FROZEN RUTS OR RIDGES)		F) .../.../... →
(MEAN DEPTH <i>(mm)</i> FOR EACH THIRD OF TOTAL RUNWAY LENGTH)		G) .../.../... →
(ESTIMATED SURFACE FRICTION ON EACH THIRD OF RUNWAY) ESTIMATED SURFACE FRICTION GOOD — 5 MEDIUM/GOOD — 4 MEDIUM — 3 MEDIUM/POOR — 2 POOR — 1 <i>(The intermediate values of "MEDIUM/GOOD" and "MEDIUM/POOR" provide for more precise information in the estimate when conditions are found to be between medium and either good or poor.)</i>		H) .../.../... →
(CRITICAL SNOWBANKS <i>(If present, insert height (cm)/distance from the edge of runway (m) followed by "L", "R" or "LR" if applicable)</i>)		J) →
(RUNWAY LIGHTS <i>(If obscured, insert "YES" followed by "L", "R" or both "LR" if applicable)</i>)		K) →
(FURTHER CLEARANCE <i>(If planned, insert length (m)/width (m) to be cleared or if to full dimensions, insert "TOTAL")</i>)		L) →
(FURTHER CLEARANCE EXPECTED TO BE COMPLETED BY . . . <i>(UTC)</i>)		M) →
(TAXIWAY <i>(If no appropriate taxiway is available, insert "NO")</i>)		N) →
(TAXIWAY SNOWBANKS <i>(If higher than 60 cm, insert "YES" followed by the lateral distance apart, m)</i>)		P) <≡
(APRON <i>(If unusable insert "NO")</i>)		R) →
(NEXT PLANNED OBSERVATION/MEASUREMENT IS FOR) <i>(month/day/hour in UTC)</i>		S) →
(PLAIN-LANGUAGE REMARKS <i>(Including contaminant coverage and other operationally significant information, e.g. sanding, de-icing, chemicals)</i>)		T)) <≡
NOTES: 1. *Enter ICAO nationality letters as given in ICAO Doc 7910, Part 2. 2. Information on other runways, repeat from B to P. 3. Words in brackets () not to be transmitted.		

SIGNATURE OF ORIGINATOR *(not for transmission)***INSTRUCTIONS FOR THE COMPLETION OF THE SNOWTAM FORMAT**

1. General

- a) When reporting on more than one runway, repeat Items B to P inclusive.
- b) Items together with their indicator must be dropped completely, where no information is to be included.
- c) Metric units must be used and the unit of measurement not reported.
- d) The maximum validity of SNOWTAM is 24 hours. New SNOWTAM must be issued whenever there is a significant change in conditions. The following changes relating to runway conditions are considered as significant:
 - 1) a change in the coefficient of friction of about 0.05;
 - 2) changes in depth of deposit greater than the following: 20 mm for dry snow, 10 mm for wet snow, 3 mm for slush;
 - 3) a change in the available length or width of a runway of 10 per cent or more;
 - 4) any change in the type of deposit or extent of coverage which requires reclassification in Items F or T of the SNOWTAM;
 - 5) when critical snow banks exist on one or both sides of the runway, any change in the height or distance from centre line;
 - 6) any change in the conspicuity of runway lighting caused by obscuring of the lights;
 - 7) any other conditions known to be significant according to experience or local circumstances.
- e) The abbreviated heading “TTAAiiii CCCC MMYYGggg (BBB)” is included to facilitate the automatic processing of SNOWTAM messages in computer data banks. The explanation of these symbols is:
 - TT = data designator for SNOWTAM = SW;
 - AA = geographical designator for States, e.g. LF = FRANCE, EG = United Kingdom (see *Location Indicators* (Doc 7910), Part 2, Index to Nationality Letters for Location Indicators);
 - iiii = SNOWTAM serial number in a four-digit group;
 - CCCC = four-letter location indicator of the aerodrome to which the SNOWTAM refers (see *Location Indicators* (Doc 7910));
 - MMYYGGgg = date/time of observation/measurement, whereby:
 - MM = month, e.g. January = 01, December = 12
 - YY = day of the month
 - GGgg = time in hours (GG) and minutes (gg) UTC;
 - (BBB) = optional group for:
 - Correction to SNOWTAM message previously disseminated with the same serial number = COR.

Note 1.— Brackets in (BBB) are used to indicate that this group is optional.

Note 2.— When reporting on more than one runway and individual dates/times of observation/measurement are indicated by repeated Item B, the latest date/time of observation/measuring is inserted in the abbreviated heading (MMYYGGgg).

Example: Abbreviated heading of SNOWTAM No. 149 from Zurich, measurement/observation of 7 November at 0620 UTC:

SWLS0149 LSZH 11070620

Note.— The information groups are separated by a space, as illustrated above.

f) The text “SNOWTAM” in the SNOWTAM Format and the SNOWTAM serial number in a four-digit group shall be separated by a space, for example: SNOWTAM 0124.

g) For readability purposes for the SNOWTAM message, include a line feed after the SNOWTAM serial number, after Item A, after the last item referring to the runway (e.g. Item P) and after Item S.

2. Item A — Aerodrome location indicator (four-letter location indicator).

3. Item B — Eight-figure date/time group — giving time of observation as month, day, hour and minute in UTC; this item must always be completed.

4. Item C — Lower runway designator number.

5. Item D — Cleared runway length in metres, if less than published length (see Item T on reporting on part of runway not cleared).

6. Item E — Cleared runway width in metres, if less than published width; if offset left or right of centre line, add (without space) “L” or “R”, as viewed from the threshold having the lower runway designation number.

7. Item F — Deposit over total runway length as explained in SNOWTAM Format. Suitable combinations of these numbers may be used to indicate varying conditions over runway segments. If more than one deposit is present on the same portion of the runway, they should be reported in sequence from the top (closest to the sky) to the bottom (closest to the runway). Drifts, depths of deposit appreciably greater than the average values or other significant characteristics of the deposits may be reported under Item T in plain language. The values for each third of the runway shall be separated by an oblique stroke (/), without space between the deposit values and the oblique stroke, for example: 47/47/47.

Note.— Definitions for the various types of snow are given at the end of this Appendix.

8. Item G — Mean depth in millimetres deposit for each third of total runway length, or “XX” if not measurable or operationally not significant; the assessment to be made to an accuracy of 20 mm for dry snow, 10 mm for wet snow and 3 mm for slush. The values for each third of the runway shall be separated by an oblique stroke (/), without space between the values and the oblique stroke, for example: 20/20/20.

9. Item H — Estimated surface friction on each third of the runway (single digit) in the order from the threshold having the lower runway designation number.

Friction measurement devices can be used as part of the overall runway surface assessment. Some States may have developed procedures for runway surface assessment which may include the use of information obtained from friction measuring devices and the reporting of quantitative values. In such cases, these procedures should be published in the AIP and the reporting made in Item (T) of the SNOWTAM format.

The values for each third of the runway are separated by an oblique stroke (/), without space between the values and the oblique stroke-, for example: 5/5/5.

10. Item J — Critical snow banks. If present insert height in centimetres and distance from edge of runway in metres, followed (without space) by left (“L”) or right (“R”) side or both sides (“LR”), as viewed from the threshold having the lower runway designation number.

11. Item K — If runway lights are obscured, insert “YES” followed (without space) by “L”, “R” or both “LR”, as viewed from the threshold having the lower runway designation number.

12. Item L — When further clearance will be undertaken, enter length and width of runway or “TOTAL” if runway will be cleared to full dimensions.

13. Item M — Enter the anticipated time of completion in UTC.

14. Item N — The code (and combination of codes) for Item F may be used to describe taxiway conditions; enter “NO” if no taxiways serving the associated runway are available.

15. Item P — If snow banks are higher than 60 cm, enter “YES” followed by the lateral distance parting the snow banks (the distance between) in metres.

16. Item R — The code (and combination of codes) for Item F may be used to describe apron conditions; enter “NO” if the apron is unusable.

17. Item S — Enter the anticipated time of next observation/measurement in UTC.

18. Item T — Describe in plain language any operationally significant information but always report on length of uncleared runway (Item D) and extent of runway contamination (Item F) for each third of the runway (if appropriate) in accordance with the following scale:

RWY CONTAMINATION 10 PER CENT — if 10% or less of runway contaminated

RWY CONTAMINATION 25 PER CENT — if 11–25% of runway contaminated

RWY CONTAMINATION 50 PER CENT — if 26–50% of runway contaminated

RWY CONTAMINATION 100 PER CENT — if 51–100% of runway contaminated.

EXAMPLE OF COMPLETED SNOWTAM FORMATGG EHAMZQZX EDDFZQZX EKCHZQZX070645 LSZHYNXXSWLS0149 LSZH 11070700(SNOWTAM 0149A) LSZHB) 11070620 C) 02 D)...P)B) 11070600 C) 09 D)...P)B) 11070700 C) 12 D)...P)R) NO S) 11070920T) DEICING

Note.— See the Aeronautical Information Services Manual (Doc 8126) for additional SNOWTAM examples incorporating different runway conditions.

Definitions of the various types of snow

Slush. Water-saturated snow which with a heel-and-toe slap-down motion against the ground will be displaced with a splatter; specific gravity: 0.5 up to 0.8.

Note.— Combinations of ice, snow and/or standing water may, especially when rain, rain and snow, or snow is falling, produce substances with specific gravities in excess of 0.8. These substances, due to their high water/ice content, will have a transparent rather than a cloudy appearance and, at the higher specific gravities, will be readily distinguishable from slush.

Snow (on the ground).

a) **Dry snow.** Snow which can be blown if loose or, if compacted by hand, will fall apart again upon release; specific gravity: up to but not including 0.35.

b) **Wet snow.** Snow which, if compacted by hand, will stick together and tend to or form a snowball; specific gravity: 0.35 up to but not including 0.5.

c) **Compacted snow.** Snow which has been compressed into a solid mass that resists further compression and will hold together or break up into lumps if picked up; specific gravity: 0.5 and over.

Editorial Note.— Appendix 4 is relocated text from Appendix 2 to Annex 15

APPENDIX 5. ASHTAM FORMAT*(see Chapter 5, 5.2.45)*

(COM heading)	(PRIORITY INDICATOR)		(ADDRESSEE INDICATOR(S)) ¹													
	(DATE AND TIME OF FILING)						(ORIGINATOR'S INDICATOR)									
(Abbreviated heading)	(VA* ² SERIAL NUMBER)						(LOCATION INDICATOR)		DATE/TIME OF ISSUANCE						(OPTIONAL GROUP)	
	V	A	*2	*2												

ASHTAM		(SERIAL NUMBER)
(FLIGHT INFORMATION REGION AFFECTED)		A)
(DATE/TIME (UTC) OF ERUPTION)		B)
(VOLCANO NAME AND NUMBER)		C)
(VOLCANO LATITUDE/LONGITUDE OR VOLCANO RADIAL AND DISTANCE FROM NAVAID)		D)
(VOLCANO LEVEL OF ALERT COLOUR CODE, INCLUDING ANY PRIOR LEVEL OF ALERT COLOUR CODE) ³		E)
(EXISTENCE AND HORIZONTAL/VERTICAL EXTENT OF VOLCANIC ASH CLOUD) ⁴		F)
(DIRECTION OF MOVEMENT OF ASH CLOUD) ⁴		G)
(AIR ROUTES OR PORTIONS OF AIR ROUTES AND FLIGHT LEVELS AFFECTED)		H)
(CLOSURE OF AIRSPACE AND/OR AIR ROUTES OR PORTIONS OF AIR ROUTES, AND ALTERNATIVE AIR ROUTES AVAILABLE)		I)
(SOURCE OF INFORMATION)		J)
(PLAIN-LANGUAGE REMARKS)		K)
NOTES: 1. See also Appendix 5 regarding addressee indicators used in predetermined distribution systems. 2. *Enter ICAO nationality letter as given in ICAO Doc 7910, Part 2. 3. See paragraph 3.5 below. 4. Advice on the existence, extent and movement of volcanic ash cloud G) and H) may be obtained from the Volcanic Ash Advisory Centre(s) responsible for the FIR concerned. 5. Item titles in brackets () not to be transmitted.		

SIGNATURE OF ORIGINATOR *(not for transmission)*

1. INSTRUCTIONS FOR THE COMPLETION OF THE ASHTAM FORMAT

1. General

1.1 The ASHTAM provides information on the status of activity of a volcano when a change in its activity is, or is expected to be of operational significance. This information is provided using the volcano level of alert colour code given in 3.5 below.

1.2 In the event of a volcanic eruption producing ash cloud of operational significance, the ASHTAM also provides information on the location, extent and movement of the ash cloud and the air routes and flight levels affected.

1.3 Issuance of an ASHTAM giving information on a volcanic eruption, in accordance with section 3 below, should **not** be delayed until complete information A) to K) is available but should be issued immediately following receipt of notification that an eruption has occurred or is expected to occur, or a change in the status of activity of a volcano of operational significance has occurred or is expected to occur, or an ash cloud is reported. In the case of an expected eruption, and hence no ash cloud evident at that time, items A) to E) should be completed and items F) to I) indicated as “not applicable”. Similarly, if a volcanic ash cloud is reported, e.g. by special air-report, but the source volcano is not known at that time, the ASHTAM should be issued initially with items A) to E) indicated as “unknown”, and items F) to K) completed, as necessary, based on the special air-report, pending receipt of further information. In other circumstances, if information for a specific field A) to K) is not available indicate “NIL”.

1.4 The maximum period of validity of ASHTAM is 24 hours. New ASHTAM must be issued whenever there is a change in the level of alert.

2. Abbreviated heading

2.1 Following the usual AFTN communications header, the abbreviated heading “TT AAiiii CCCC MMYYGggg (BBB)” is included to facilitate the automatic processing of ASHTAM messages in computer data banks. The explanation of these symbols is:

TT = data designator for ASHTAM = VA;

AA = geographical designator for States, e.g. NZ = New Zealand (see *Location Indicators* (Doc 7910), Part 2, Index to Nationality Letters for Location Indicators);

iiii = ASHTAM serial number in a four-figure group;

CCCC = four-letter location indicator of the flight information region concerned (see *Location Indicators* (Doc 7910), Part 5, addresses of centres in charge of FIR/UIR);

MMYYGggg = date/time of report, whereby:

MM = month, e.g. January = 01, December = 12

YY = day of the month

GGgg = time in hours (GG) and minutes (gg) UTC;

(BBB) = Optional group for correction to an ASHTAM message previously disseminated with the same serial number = COR.

Note.— Brackets in (BBB) are used to indicate that this group is optional.

Example: Abbreviated heading of ASHTAM for Auckland Oceanic FIR, report on 7 November at 0620 UTC:

VANZ0001 NZZO 11070620

3. Content of ASHTAM

3.1 Item A — Flight information region affected, plain-language equivalent of the location indicator given in the abbreviated heading, in this example “Auckland Oceanic FIR”.

3.2 Item B — Date and time (UTC) of first eruption.

3.3 Item C — Name of volcano, and number of volcano as listed in the ICAO *Manual on Volcanic Ash, Radioactive Material and Toxic Chemical Clouds* (Doc 9691), Appendix H, and on the World Map of Volcanoes and Principal Aeronautical Features.

3.4 Item D — Latitude/Longitude of the volcano in whole degrees or radial and distance of volcano from NAVAID (as listed in the ICAO *Manual on Volcanic Ash, Radioactive Material and Toxic Chemical Clouds* (Doc 9691), Appendix H, and on the World Map of Volcanoes and Principal Aeronautical Features).

3.5 Item E — Colour code for level of alert indicating volcanic activity, including any previous level of alert colour code as follows:

<u>Level of alert colour code</u>	<u>Status of activity of volcano</u>
<u>GREEN ALERT</u>	<u>Volcano is in normal, non-eruptive state.</u> <u>or, after a change from a higher alert level:</u> <u>Volcanic activity considered to have ceased, and volcano reverted to its normal, non-eruptive state.</u>
<u>YELLOW ALERT</u>	<u>Volcano is experiencing signs of elevated unrest above known background levels.</u> <u>or, after a change from higher alert level:</u> <u>Volcanic activity has decreased significantly but continues to be closely monitored for possible renewed increase.</u>
<u>ORANGE ALERT</u>	<u>Volcano is exhibiting heightened unrest with increased likelihood of eruption.</u> <u>or,</u> <u>Volcanic eruption is underway with no or minor ash emission [specify ash-plume height if possible].</u>
<u>RED ALERT</u>	<u>Eruption is forecasted to be imminent with significant emission of ash into the atmosphere likely.</u> <u>or,</u> <u>Eruption is underway with significant emission of ash into the atmosphere [specify ash-plume height if possible].</u>

Note.— The colour code for the level of alert indicating the status of activity of the volcano and any change from a previous status of activity should be provided to the area control centre by the responsible vulcanological agency in the State concerned, e.g. “RED ALERT FOLLOWING YELLOW” OR “GREEN ALERT FOLLOWING ORANGE”.

3.6 Item F — If volcanic ash cloud of operational significance is reported, indicate the horizontal extent and base/top of the ash cloud using latitude/longitude (in whole degrees) and altitudes in thousands of metres (feet) and/or radial and distance from source volcano. Information initially may be based only on special air-report, but subsequent information may be more detailed based on advice from the responsible meteorological watch office and/or volcanic ash advisory centre.

3.7 Item G — Indicate forecast direction of movement of the ash cloud at selected levels based on advice from the responsible meteorological watch office and/or volcanic ash advisory centre.

3.8 Item H — Indicate air routes and portions of air routes and flight levels affected, or expected to become affected.

3.9 Item I — Indicate closure of airspace, air routes or portions of air routes, and availability of alternative routes.

3.10 Item J — Source of the information, e.g. “special air-report” or “vulcanological agency”, etc. The source of information should always be indicated, whether an eruption has actually occurred or ash cloud reported, or not.

3.11 Item K — Include in plain language any operationally significant information additional to the foregoing.

Editorial Note.— Appendix 5 is relocated text from Appendix 3 to Annex 15.

APPENDIX 6. TERRAIN AND OBSTACLE ATTRIBUTES PROVISION REQUIREMENTS

Table A6-1. Terrain attributes

<u>Terrain attribute</u>	<u>Mandatory/Optional</u>
<u>Area of coverage</u>	<u>Mandatory</u>
<u>Data originator identifier</u>	<u>Mandatory</u>
<u>Data source identifier</u>	<u>Mandatory</u>
<u>Acquisition method</u>	<u>Mandatory</u>
<u>Post spacing</u>	<u>Mandatory</u>
<u>Horizontal reference system</u>	<u>Mandatory</u>
<u>Horizontal resolution</u>	<u>Mandatory</u>
<u>Horizontal accuracy</u>	<u>Mandatory</u>
<u>Horizontal confidence level</u>	<u>Mandatory</u>
<u>Horizontal position</u>	<u>Mandatory</u>
<u>Elevation</u>	<u>Mandatory</u>
<u>Elevation reference</u>	<u>Mandatory</u>
<u>Vertical reference system</u>	<u>Mandatory</u>
<u>Vertical resolution</u>	<u>Mandatory</u>
<u>Vertical accuracy</u>	<u>Mandatory</u>
<u>Vertical confidence level</u>	<u>Mandatory</u>
<u>Surface type</u>	<u>Optional</u>
<u>Recorded surface</u>	<u>Mandatory</u>
<u>Penetration level</u>	<u>Optional</u>
<u>Known variations</u>	<u>Optional</u>
<u>Integrity</u>	<u>Mandatory</u>
<u>Date and time stamp</u>	<u>Mandatory</u>
<u>Unit of measurement used</u>	<u>Mandatory</u>

Table A6-2. Obstacle attributes

<u>Obstacle attribute</u>	<u>Mandatory/Optional</u>
<u>Area of coverage</u>	<u>Mandatory</u>
<u>Data originator identifier</u>	<u>Mandatory</u>
<u>Data source identifier</u>	<u>Mandatory</u>
<u>Obstacle identifier</u>	<u>Mandatory</u>
<u>Horizontal accuracy</u>	<u>Mandatory</u>
<u>Horizontal confidence level</u>	<u>Mandatory</u>
<u>Horizontal position</u>	<u>Mandatory</u>
<u>Horizontal resolution</u>	<u>Mandatory</u>
<u>Horizontal extent</u>	<u>Mandatory</u>
<u>Horizontal reference system</u>	<u>Mandatory</u>
<u>Elevation</u>	<u>Mandatory</u>
<u>Height</u>	<u>Optional</u>
<u>Vertical accuracy</u>	<u>Mandatory</u>
<u>Vertical confidence level</u>	<u>Mandatory</u>
<u>Vertical resolution</u>	<u>Mandatory</u>
<u>Vertical reference system</u>	<u>Mandatory</u>
<u>Obstacle type</u>	<u>Mandatory</u>
<u>Geometry type</u>	<u>Mandatory</u>
<u>Integrity</u>	<u>Mandatory</u>
<u>Date and time stamp</u>	<u>Mandatory</u>
<u>Unit of measurement used</u>	<u>Mandatory</u>
<u>Operations</u>	<u>Optional</u>
<u>Effectivity</u>	<u>Optional</u>
<u>Lighting</u>	<u>Mandatory</u>

Editorial Note.— Appendix 6 is relocated Table A8-3 and Table A8-4 from Appendix 8 to Annex 15.

APPENDIX 7. PREDETERMINED DISTRIBUTION SYSTEM FOR NOTAM

(see Chapter 5, 5.3.4.2, and Annex 10, Volume II, Chapter 4, 4.4.14)

1. The predetermined distribution system provides for incoming NOTAM (including SNOWTAM and ASHTAM) to be channelled through the AFS direct to designated addressees predetermined by the receiving country concerned while concurrently being routed to the international NOTAM office for checking and control purposes.

2. The addressee indicators for those designated addressees are constituted as follows:

1) *First and second letters:*

The first two letters of the location indicator for the AFS communication centre associated with the relevant international NOTAM office of the receiving country.

2) *Third and fourth letters:*

The letters “ZZ” indicating a requirement for special distribution.

3) *Fifth letter:*

The fifth letter differentiating between NOTAM (letter “N”), SNOWTAM (letter “S”), and ASHTAM (letter “V”).

4) *Sixth and seventh letters:*

The sixth and seventh letters, each taken from the series A to Z and denoting the national and/or international distribution list(s) to be used by the receiving AFS centre.

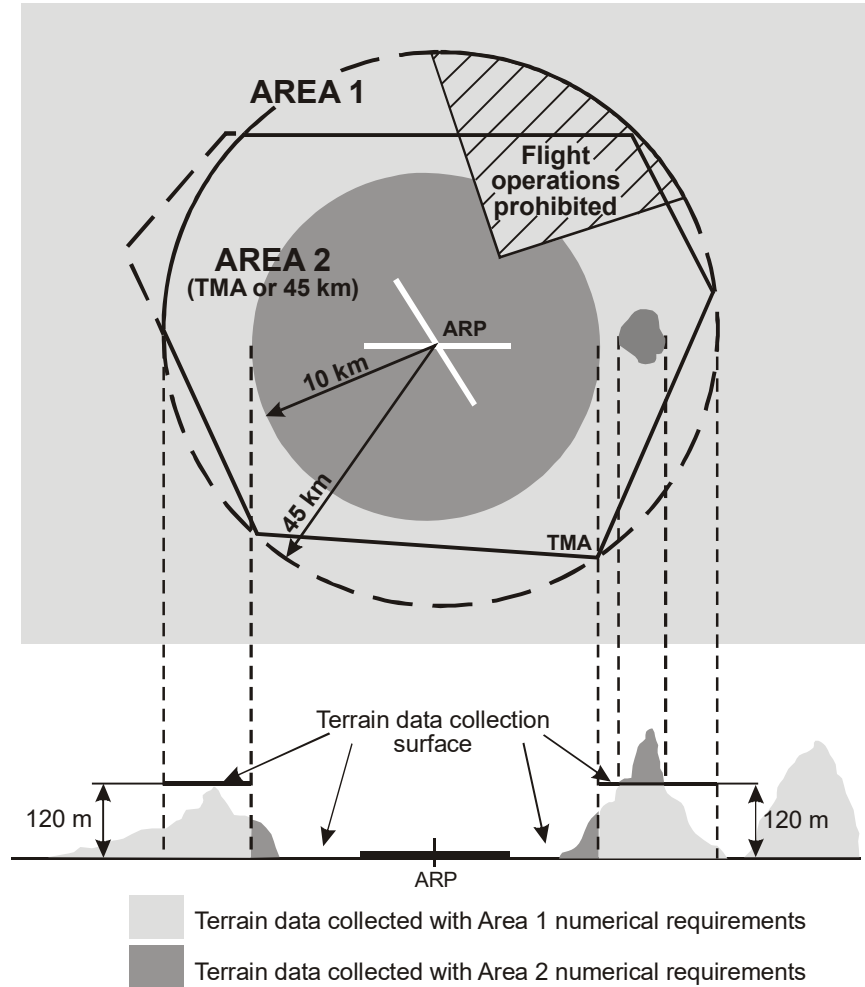
Note.— The fifth, sixth and seventh letters replace the three-letter designator YNY which, in the normal distribution system, denotes an international NOTAM office.

5) *Eighth letter:*

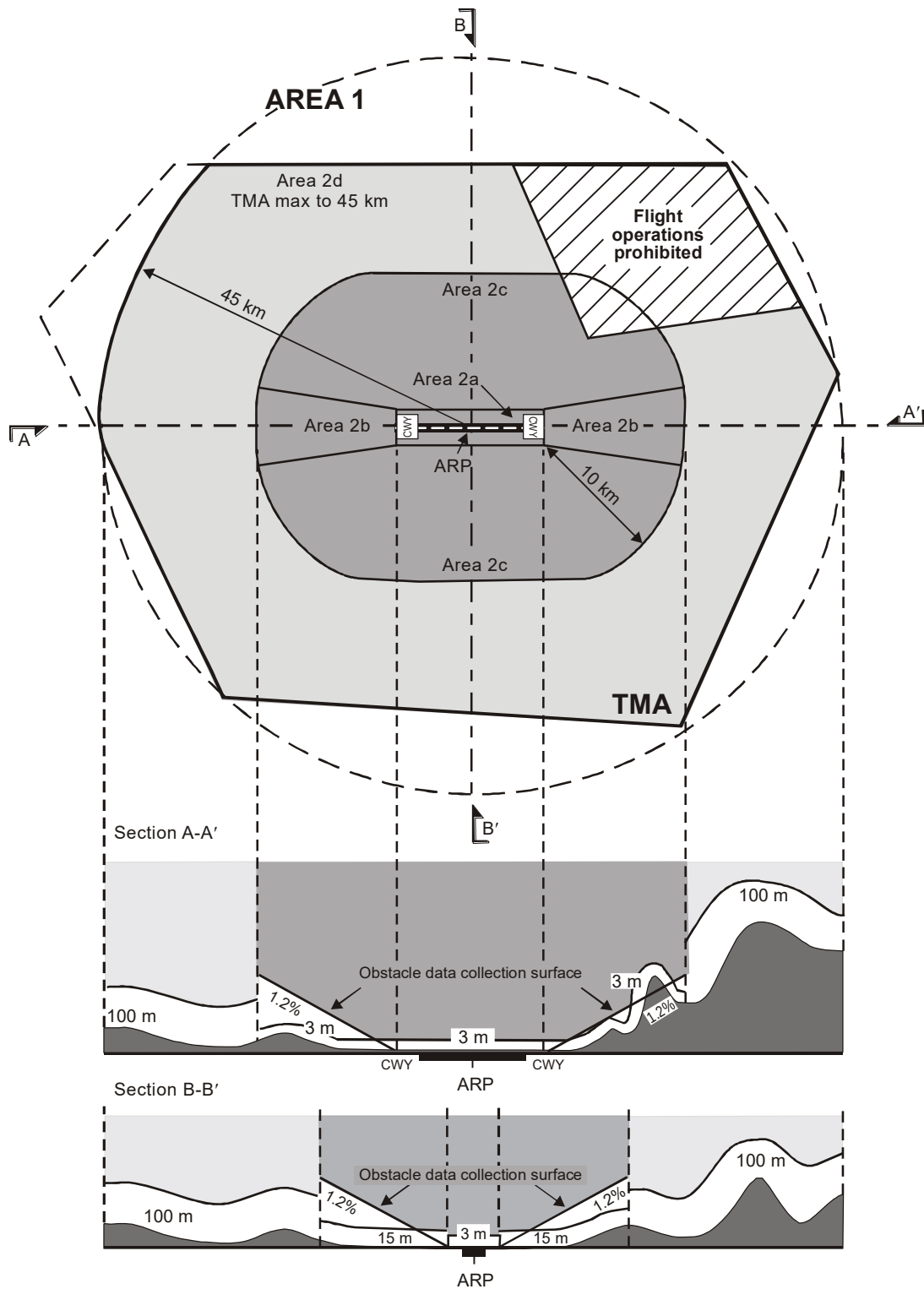
The eighth position letter shall be the filler letter “X” to complete the eight-letter addressee indicator.

3. States are to inform the States from which they receive NOTAM of the sixth and seventh letters to be used under different circumstances to ensure proper routing.

Editorial Note.— Appendix 7 is relocated from Appendix 5 to Annex 15

APPENDIX 8. TERRAIN AND OBSTACLE DATA REQUIREMENTS*(see Chapter 5)***Figure A8-1. Terrain data collection surfaces — Area 1 and Area 2**

1. Within the area covered by a 10-km radius from the ARP, terrain data shall comply with the Area 2 numerical requirements.
2. In the area between 10 km and the TMA boundary or 45-km radius (whichever is smaller), data on terrain that penetrates the horizontal plane 120 m above the lowest runway elevation shall comply with the Area 2 numerical requirements.
3. In the area between 10 km and the TMA boundary or 45-km radius (whichever is smaller), data on terrain that does not penetrate the horizontal plane 120 m above the lowest runway elevation shall comply with the Area 1 numerical requirements.
4. In those portions of Area 2 where flight operations are prohibited due to very high terrain or other local restrictions and/or regulations, terrain data shall comply with the Area 1 numerical requirements.



Note.— Terrain data numerical requirements for Areas 1 and 2 are specified in Table A8-1.

Figure A8-2. Obstacle data collection surfaces — Area 1 and Area 2

1. Obstacle data shall be collected and recorded in accordance with the Area 2 numerical requirements

specified in Table A8-2:

2. In those portions of Area 2 where flight operations are prohibited due to very high terrain or other local restrictions and/or regulations, obstacle data shall be collected and recorded in accordance with the Area 1 requirements.
3. Data on every obstacle within Area 1 whose height above the ground is 100 m or higher shall be collected and recorded in the database in accordance with the Area 1 numerical requirements specified in Table A8-2.

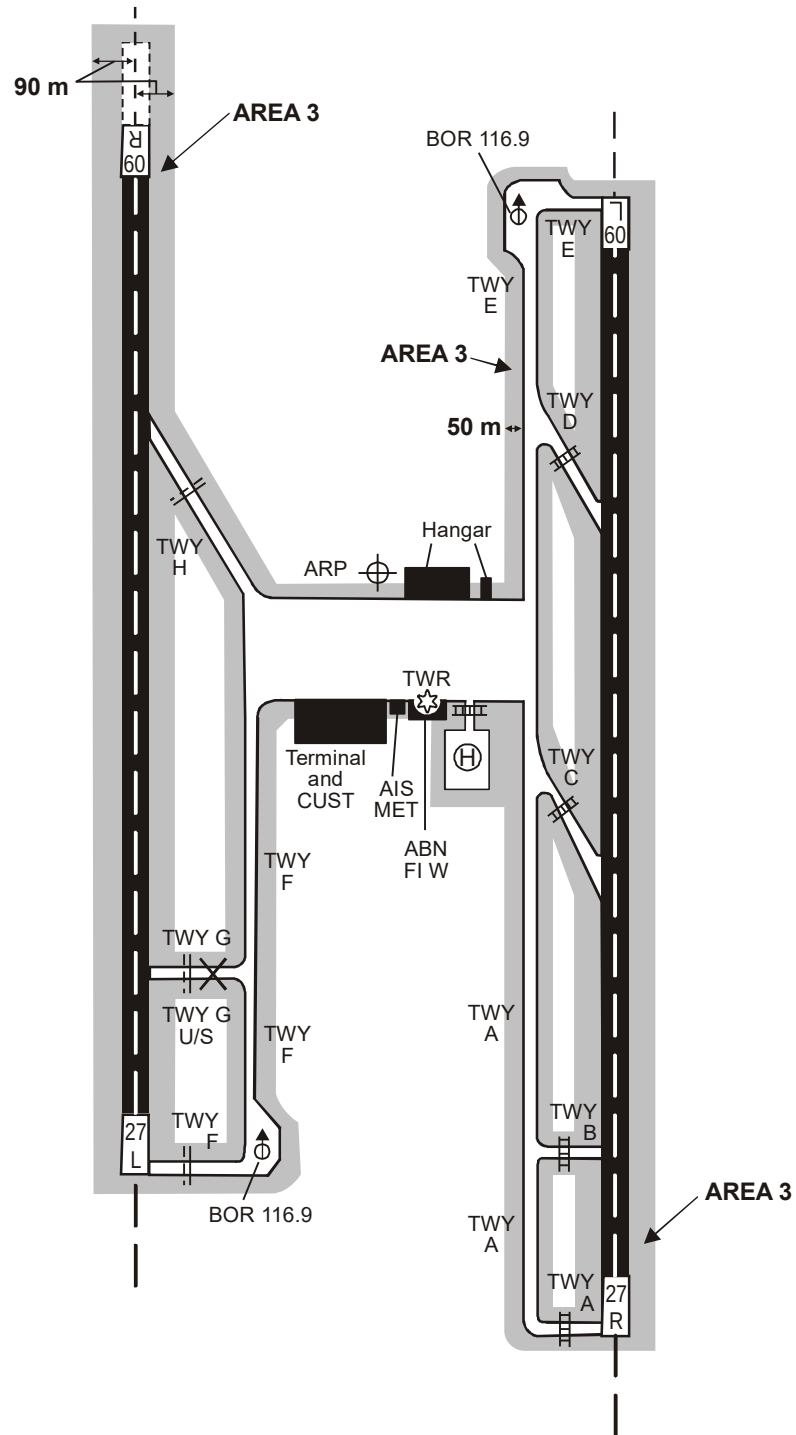


Figure A8-3. Terrain and obstacle data collection surface — Area 3

1. Terrain and obstacle data in Area 3 shall comply with the numerical requirements specified in Table A8-1 and Table A8-2, respectively.

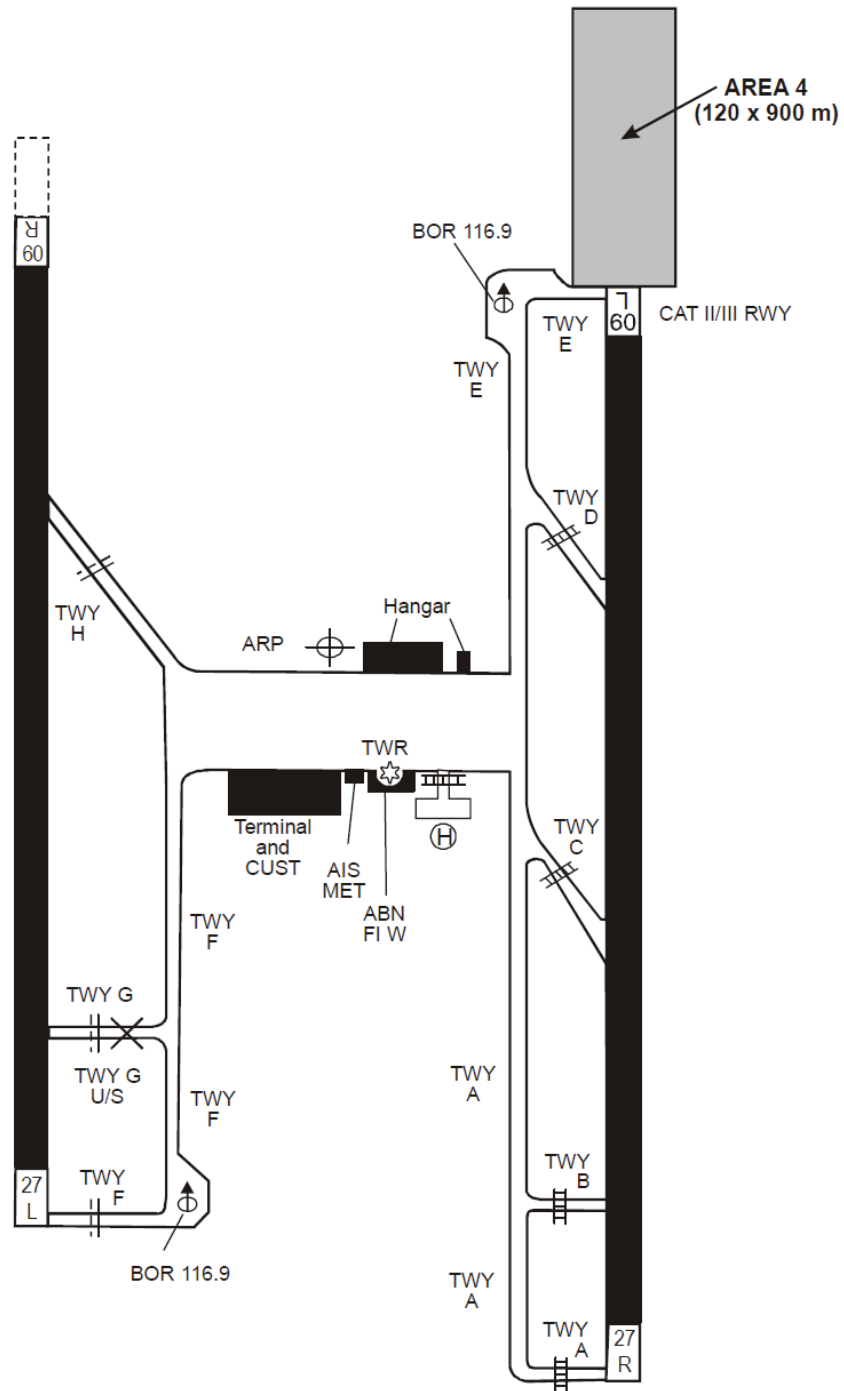


Figure A8-4. Terrain and obstacle data collection surface — Area 4

Terrain and obstacle data in Area 4 shall comply with the numerical requirements specified in Table A8-1 and Table A8-2 respectively.

Note.— Area 4 may be extended in accordance with 10.1.2.

Origin	Rationale - PANS-AIM
AIS-AIMSG	Procedures for Air Navigation Services (PANS) contain for the most part operating procedures regarded as not yet having attained a sufficient degree of maturity for adoption as SARPS, as well as material of a more permanent character which is considered too detailed for incorporation in an Annex, or is susceptible to frequent amendment, for which the processes of the Convention would be too cumbersome. It has been acknowledged that many of the existing specifications in Annex 15 are too detailed and would be much more appropriate to be incorporated into a PANS document. At the same time, while many specifications in Doc 8126 are too specific to be incorporated into Annex 15, their promulgation in a guidance document may not be conducive to reaching a higher level of harmonization. Following an assessment of Annex 15 and Doc 8126, it was observed that specifications published as PANS would provide a means for increased harmonization within the domain of AIS/AIM as well as provide a vehicle for the emerging technical requirements of AIM.

ATTACHMENT G to State letter AN 2/2.1.1-17/22

PROPOSED AMENDMENT TO CONTENT RELOCATED TO PANS-AIM

NOTES ON THE PRESENTATION OF THE PROPOSED AMENDMENT

The text of the amendment is arranged to show deleted text with a line through it and new text highlighted with grey shading, as shown below:

~~Text to be deleted is shown with a line through it.~~

text to be deleted

New text to be inserted is highlighted with grey shading.

new text to be inserted

~~Text to be deleted is shown with a line through it~~ followed by the
replacement text which is highlighted with grey shading.

new text to replace
existing text

TEXT OF PROPOSED AMENDMENT TO THE
PROCEDURES FOR AIR NAVIGATION SERVICES —
AERONAUTICAL INFORMATION MANAGEMENT
(PANS-AIM)

Note: As PANS-AIM is a new document, it includes both new text as well as text that has been copied from other references (Annex 15 and Doc 8126, for example). This Appendix only shows the new material and any revised text from other documents as well as the justification for it. Appendix E provides the structure of PANS-AIM and this Appendix is arranged accordingly.

INITIAL PROPOSAL 1 - PANS-AIM CREATION

Editorial Note.— Insert new text as follows:

FOREWORD

1. HISTORICAL BACKGROUND

1.1 The Air Navigation Commission, at the eleventh meeting of its 177th Session on 20 March 2008, agreed to the establishment of an Aeronautical Information Services to Aeronautical Information Management (AIS - AIM) study group in order to assist the Secretariat with the development of:

- a) a global strategy/roadmap for the transition from Aeronautical Information Services (AIS) to Aeronautical Information Management (AIM);
- b) Standards and Recommended Practices (SARPs) and guidance material related to the provision of a standard aeronautical information conceptual model and standard aeronautical information exchange model to enable the global exchange of data in digital format; and
- c) other SARPs, guidance material and training material necessary to support AIM implementation.

1.2 Following an assessment of Annex 15 — *Aeronautical Information Services* and the *Aeronautical Information Services Manual* (Doc 8126), it was proposed by the study group and accepted by the Air Navigation Commission that specifications published as Procedures for Air Navigation Services (PANS) would provide a more appropriate means for increased standardization and harmonisation within the domain of AIS/AIM as well as provide a vehicle for the emerging technical requirements of AIM. Consequently, the study group proceeded with development of the PANS-AIM using material currently contained in Annex 15 and Doc 8126.

1.3 The *Procedures for Air Navigation Services — Aeronautical Information Management* (PANS-AIM) contains several provisions in support to the transition from the product-based Aeronautical Information Services (AIS) to the data centric Aeronautical Information Management (AIM). This edition includes detailed requirements for the collection, management and provision of aeronautical data and aeronautical information as well as Aeronautical Information Products and services specifications.

2. SCOPE AND PURPOSE

2.1 The *Procedures for Air Navigation Services — Aeronautical Information Management* (PANS-AIM) are complementary to the Standards and Recommended Practices contained in Annex 15 — *Aeronautical Information Services* and in Annex 4 — *Aeronautical Charts*. They are supplemented when necessary by regional procedures contained in the *Regional Supplementary Procedures* (Doc 7030).

Note 1.— Although the provisions and procedures are mainly directed to States (including AIS), data originators, commercial data houses of aeronautical data and aeronautical information and users should be familiar with the procedures contained in this document.

Note 2. — One of the objectives of AIM is to ensure integrity of aeronautical data is maintained through the data process from survey/origination to distribution to the next intended user. The provisions and procedures in this document do not relieve the end users of aeronautical data and aeronautical information of their responsibility to ensure accuracy and integrity of aeronautical data and information received.

2.2 The PANS-AIM specify, in greater detail than the Standards and Recommended Practices, the actual procedures to be applied by aeronautical information management units in providing the various aeronautical information services to other States and aviation stakeholders.

2.3 The PANS-AIM include topics that are relevant to the provision of harmonized procedures in the AIS/AIM domain, provide a framework for the delivery of uniform aeronautical information services in future AIM environments as well as represent a vehicle for emerging technical requirements.

3. STATUS

3.1 The Procedures for Air Navigation Services (PANS) do not have the same status as the Standards and Recommended Practices. While the latter are adopted by Council in pursuance of Article 37 of the Convention on International Civil Aviation, subject to the full procedure of Article 90, the PANS are approved by the Council and recommended to Contracting States for worldwide application.

3.2 While the PANS may contain material which may eventually become Standards or Recommended Practices (SARPs) when it has reached the maturity and stability necessary for adoption as such, they may also comprise material prepared as an amplification of the basic principles in the corresponding SARPs, and designed particularly to assist the user in the application of those SARPs.

4. IMPLEMENTATION

4.1 The implementation of procedures is the responsibility of Contracting States; they are applied in actual operations only after, and in so far as, States have enforced them. However, with a view to facilitating their processing towards implementation by States, they have been prepared in language which will permit direct use by the air navigation community.

5. PUBLICATION OF DIFFERENCES

5.1 The PANS do not carry the status afforded to Standards adopted by the Council as Annexes to the Convention and, therefore, do not come within the obligation imposed by Article 38 of the Convention to notify differences in the event of non-implementation.

5.2 However, attention of States is drawn to the provision of Annex 15 related to the publication in their Aeronautical Information Publication of lists of significant differences between their procedures and the related ICAO procedures.

6. PROMULGATION OF INFORMATION

Information relating to the establishment and withdrawal of and changes to facilities, services and procedures affecting aircraft operations provided according to the Procedures specified in this document should be notified and take effect in accordance with Annex 15.

7. CONTENTS OF THE DOCUMENT

7.1 Chapter 1 – Definitions

Chapter 1 contains a list of terms and their technical meanings as used in this document.

7.2 Chapter 2 – Aeronautical Information Management

7.2.1 Chapter 2 describes the main aeronautical information management functions that include the collection, processing, quality control and distribution of data and information, as well as data integrity monitoring and assurance.

7.2.2 Appendix 1 (Aeronautical Data Catalogue) presents the scope of data and information that can be collected and maintained by an AIS organization. The Aeronautical Data Catalogue symbolizes the shift from product-centric to data centric environments, is considered the point of reference for all provisions related to aeronautical data origination and publication and represents the common language for data originators and AIS organizations.

7.3 Chapter 3 – Quality Management

Chapter 3 focuses on the quality management aspect of AIM. It explains the general requirements of the quality management system related to AIM processes.

7.4 Chapter 4 – Aeronautical Data Requirements

7.4.1 Chapter 4 outlines the data origination requirements and how data shall be collected and transmitted to the AIS in accordance with accuracy requirements and integrity classification as specified in Appendix 1.

7.4.2 The chapter also deals with the minimum metadata requirements.

7.5 Chapter 5 – Aeronautical Information Products and Services

7.5.1 Chapter 5 outlines the specifications regarding the provision of Aeronautical Information Products (in printed or electronic form) and Services. This includes the Aeronautical Information Publication (AIP), AIP amendments and supplements and Aeronautical Information Circulars (AIC).

7.5.2 The chapter also provides general specifications on NOTAM, number and series allocation, NOTAM checklist and distribution. The chapter includes also specifications on pre-flight information services.

7.5.3 General provisions for digital data are also explained as well as specific details on the various data sets – AIP data sets, terrain and obstacle data sets, aerodrome mapping data sets and instrument flight procedure data sets.

7.5.4 Data element properties, sub-properties and descriptions and quality requirements (accuracy, resolution, integrity) are contained in Appendix 1.

7.5.5 Contents of the Aeronautical Information Publication are contained in Appendix 2.

7.5.6 Format and instructions for completion of NOTAM, SNOWTAM and ASHTAM are found in Appendices 3, 4 and 5, respectively.

7.5.7 Terrain and obstacle attributes provision requirements are detailed in Appendix 6.

7.5.8 Predetermined distribution of NOTAM is detailed in Appendix 7.

7.6 Chapter 6 – Aeronautical Information Updates

Chapter 6 details how to update Aeronautical Information Products and Services.

Table A. Amendments to PANS-AIM.

Origin	Rationale - PANS-AIM creation
AIS-AIMSG	Procedures for Air Navigation Services (PANS) contain for the most part operating procedures regarded as not yet having attained a sufficient degree of maturity for adoption as SARPs, as well as material of a more permanent character which is considered too detailed for incorporation in an Annex, or is susceptible to frequent amendment, for which the processes of the Convention would be too cumbersome. It has been acknowledged that many of the existing specifications in Annex 15 are too detailed and would be much more appropriate to be incorporated into a PANS document. At the same time, while many specifications in Doc 8126 are too specific to be incorporated into Annex 15, their promulgation in a guidance document may not be

	conducive to reaching a higher level of harmonization. The specifications published as PANS will provide a means for increased harmonization within the domain of AIS/AIM, become a reference to enable the delivery of uniform aeronautical information services in future AIM environments, as well as provide a vehicle for the emerging technical requirements of AIM.

INITIAL PROPOSAL 2 - Data Quality Requirements

CHAPTER 1 - DEFINITIONS

When the following terms are used in the present document they have the following meanings:

...

Data Accuracy. A degree of conformance between the estimated or measured value and the true value.

Note. — For measured positional data the accuracy is normally expressed in terms of a distance from a stated position within which there is a defined confidence of the true position falling.

...

Data completeness. The degree of confidence that all of the data needed to support the intended use is provided.

...

Data format. A structure of data elements, records and files arranged to meet standards, specifications or data quality requirements.

...

Data quality. A degree or level of confidence that the data provided meet the requirements of the data user in terms of accuracy, resolution, integrity (or equivalent assurance level), traceability, timeliness, completeness and format.

Data timeliness. The degree of confidence that the data is applicable to the period of its intended use.

Data traceability: the degree that a system or a data product can provide a record of the changes made to that product and thereby enable an audit trail to be followed from the end-user to the originator.

...

Data Integrity (aeronautical data assurance level). A degree of assurance that an aeronautical data and its value has not been lost or altered since the data origination or authorized amendment.

Data Resolution. A number of units or digits to which a measured or calculated value is expressed and used.

...

Origin	Rationale - Rationale for Data Quality Requirements
AIS-AIMSG	PANS-AIM definitions are updated to reflect the proposed amendment to Annex 15 with respect to data quality and its characteristics.

INITIAL PROPOSAL 3 – Aeronautical Information Product

CHAPTER 1. DEFINITIONS

...

Aeronautical Information Product. Aeronautical data and aeronautical information provided either as digital data sets or as a standardized presentation in paper or electronic media. Aeronautical Information Products include:

- Aeronautical Information Publication (AIP), including Amendments and Supplements;
- Aeronautical Information Circulars (AIC);
- Aeronautical charts;
- NOTAM; and
- Digital data sets.

Note.— Aeronautical Information Products are intended primarily to satisfy international requirements for the exchange of aeronautical information.

...

AIP Supplement. Temporary changes to the information contained in the AIP which are published provided by means of special pages.

...

~~**AIS product.** Aeronautical data and aeronautical information provided in the form of the elements of the Integrated Aeronautical Information Package (except NOTAM and PIB), including aeronautical charts, or in the form of suitable electronic media.~~

...

~~Integrated Aeronautical Information Package.~~ A package in paper, or electronic media which consists of the following elements:

- ~~— AIP, including amendment service;~~
- ~~— Supplements to the AIP;~~
- ~~— NOTAM and PIB;~~
- ~~— AIC; and~~
- ~~— checklists and lists of valid NOTAM.~~

...

Origin	Rationale - Aeronautical Information Product
AIS-AIMSG	The term Aeronautical Information Product has been introduced to compile all AIS deliverables to be provided in either digital data sets or as a standardized presentation in paper or electronic media. The use of the term Integrated Aeronautical Information Package and AIS Product are considered redundant. It is also proposed to replace the term “published” with the term provided, as the word “published” is a word that is used most commonly for paper publications and not for electronic and digital data.

INITIAL PROPOSAL 4 - Originator, Origination - Terminology

CHAPTER 1. DEFINITIONS

...

Origination (aeronautical data or aeronautical information). The creation of the value associated with new data or information or the modification of the value of an existing data or information.

Originator (aeronautical data or aeronautical information). An entity that is accountable for data or information origination and from which the AIS organisation receives aeronautical data and information.

...

Origin	Rationale - Originator, Origination - Terminology
AIS-AIMSG	Clear identification of the main functions, associated responsibilities, accountabilities and formal relations between different entities undertaking activities relating to the provision of aeronautical information

	is critical in the context of the transition from AIS to AIM. The introduction of the terms “origination” and “originator”, within the context of the provisions of AIM data and information, is intended to clarify the role of the entity that is accountable for data origination, from which the AIS organization receives aeronautical data and information. The relationship between data originators and the aeronautical information services organization should be specified through formal arrangements that identify clear roles and responsibilities, avoid misunderstanding and ensure data-quality.

INITIAL PROPOSAL 5 - Next Intended User - Terminology

CHAPTER 1. DEFINITIONS

...

Next intended user. The entity that receives the aeronautical data or information from the Aeronautical Information Service.

...

Origin	Rationale - Next Intended User - Terminology
AIS-AIMSG	The introduction of the term “next intended user” further clarifies roles and responsibilities along the data chain.

INITIAL PROPOSAL 6 – Aeronautical Chart

CHAPTER 1. DEFINITIONS

...

Aeronautical chart. A representation of a portion of the Earth, its culture and relief, specifically designated to meet the requirements of air navigation.

...

Origin	Rationale: Aeronautical chart to be added
AIS-AIMSG	“Aeronautical chart” is a term used in PANS-AIM and it is not included

	in the definitions.

INITIAL PROPOSAL 7 – Aeronautical Information Management

CHAPTER 2. AERONAUTICAL INFORMATION MANAGEMENT

2.1 Information management requirements

Management of aeronautical data and aeronautical information shall include the following processes:

- collection
- processing
- quality control
- distribution

2.1.1 Collection

2.1.1.1 The identification of data originators, or the relevant entities responsible for delivering data to the AIS, shall be documented based on the scope of aeronautical data and aeronautical information to be collected.

2.1.1.2 A record of data originators should be maintained.

Note. — *Metadata requirements in Chapter 4 specify which information is to be recorded for each originator.*

2.1.1.3 Each data element to be collected should be mapped to an identified data originator, in accordance with the formal arrangements established between data originators and the AIS.

2.1.1.4 The list of aeronautical information subjects and their properties, as contained in Appendix 1, should be used to establish formal arrangements between the originators and the AIS.

2.1.1.5 Valid codes for the code lists of the aeronautical data properties and sub-properties should be defined in the formal arrangements between the originators and the AIS.

2.1.1.6 Appendix 1 shall be considered as a reference for aeronautical data and aeronautical information origination and publication requirements.

Note 1.— *Appendix 1 presents the scope of data and information that can be collected and maintained by the AIS.*

Note 2.— Appendix 1 provides a common language that can be used by data originators and the AIS.

2.1.2 Processing

2.1.2.1 Collected data shall be verified and validated for compliance with completeness, format, timeliness, traceability and data quality requirements.

Note 1.— Appendix 1 contains aeronautical data attributes, metadata, and accuracy requirements.

...

Note 4.— Guidance material on the management of aeronautical data quality is included in the Manual on the Quality Management System for Aeronautical Information Services (Doc 9839) ~~(to be developed)~~.

Note 5.— Verification activities may include:

- a) *comparison processes in which data and information are compared with an independent source;*
- b) *feedback processes in which data and information are compared between their input and output state;*
- c) *processing through multiple independent and different systems, comparing the output of each; this includes performing alternative calculations; and*
- d) *processes in which data and information are compared to the originator's request.*

Note 6.— Validation activities may include:

- a) *application processes in which data and information are tested;*
- b) *processes in which data and information are compared between two different outputs; and*
- c) *processes in which data and information are compared to an expected range, value or other business rules.*

2.1.2.2 Automation systems implemented for processing aeronautical data and aeronautical information should ensure traceability of the performed actions.

2.1.3. Quality control

...

2.1.3.1 Quality checks should be implemented to ensure compliance with product specifications contained in Chapter 5 of PANS-AIM.

2.1.3.2 When the same data is duplicated in different Aeronautical Information Products, coherency checks should be undertaken.

2.1.4 Distribution

(To be developed)

Origin	Rationale - Aeronautical Information Management
AIS-AIMSG	This paragraph describes the main functions (collection, processing and quality control) that have to be undertaken within an aeronautical information management environment. With respect to the collection process, the paragraph describes the working relationships between the AIS and the data originators (or the entities that deliver data to the AIS), including the formal arrangements to be established between them, so as to ensure proper collection of aeronautical data. With respect to the processing activity, the paragraph describes how collected aeronautical data has to be processed, verified and validated in order to ensure quality, before it is made available to the next intended user. With respect to the quality control process, the paragraph emphasizes the need to ensure that product specifications are met and recommends undertaking quality checks to that effect. Besides, it also recommends ensuring coherency between data duplicated in different Aeronautical Information Products.

INITIAL PROPOSAL 8 - Data protection

CHAPTER 2. AERONAUTICAL INFORMATION MANAGEMENT

...

2.2 Data integrity monitoring and assurance

2.2.1 Data integrity should be assured by employing cryptographic technologies (e.g. hash functions, message authentication codes, asymmetric and symmetric encryption, and digital certificates).

Note.— *Guidance material in respect to the processing of aeronautical data and aeronautical information is contained in RTCA Document DO-200AB and European Organization for Civil Aviation Equipment (EUROCAE) Document ED-76A — Standards for Processing Aeronautical Data.*

2.2.2 The technical means used for data error detection should be based on the use of systematic cycling codes.

Note. — *The means to implement systematic cycling codes include the use of hash functions and cyclic redundancy check (CRC).*

Origin	Rationale Data protection
AIS-AIMSG	The current prescriptive specification in Annex 15 for 32-bit CRCs can be seen to be difficult to comply with. The AIS-AIM Study Group agreed to introduce a performance-based requirement into Annex 15 to maintain data integrity by implementing a mechanism to detect errors in digital data introduced during transmission or storage. CRC remains as a recommendation in PANS-AIM with respect to data protection.

INITIAL PROPOSAL 9 - Quality management

CHAPTER 3. QUALITY MANAGEMENT

3.1 Quality management system

3.1.1 This chapter provides general requirements on the quality management system related to AIM processes.

Note.— Detailed guidance can be found in the Manual on the Quality Management System for Aeronautical Information Management (Doc 9839).

3.1.2 The general requirements for a QMS shall be to:

- a) develop a quality manual that includes the scope of a quality management system as applied to AIM processes;
- b) identify the processes needed for the QMS;
- c) determine the sequence and interaction of these processes;
- d) determine criteria and methods required to ensure the effective operation and control of these processes;
- e) ensure the availability of information necessary to support the operation and monitoring of these processes;
- f) measure, monitor and analyse these processes, and implement action necessary to achieve planned results and continual improvement; and
- g) maintain appropriate records that are necessary to provide confidence of conformity of the processes and resulting product.

3.1.3 In the framework of the quality management system, a user feedback system shall be defined and implemented.

Note 1. — Quality management may be provided by a single quality management system or ~~serial~~ a series of quality management systems.

Note 2.— International Organization for Standardization (ISO) 9000 series of quality assurance standards provide a basic framework for the development of a quality assurance programme ~~and define the term “accredited certification body”. The details of a successful programme are to be formulated by each State and in most cases are unique to the State organization. An ISO 9000 certificate issued by an accredited certification body would be considered an acceptable means of compliance.~~

Note 3. — ~~Letters of agreement~~ Formal arrangements concerning data quality between originator and distributor and between distributor and next intended user may be used to manage the aeronautical information data chain.

Note 4. — Guidance material concerning training methodology to ensure the competency of personnel is contained in the Aeronautical Information Management Training Development Manual (Doc 9991) ~~(to be developed).~~

Origin	Rationale – Quality management
AIS-AIMSG	The quality management chapter of PANS-AIM aims to describe the main operating procedures that need to be implemented in order to ensure that data quality is maintained from origination to the next intended user.

INITIAL PROPOSAL 10 - Data origination requirements

CHAPTER 4 - AERONAUTICAL DATA REQUIREMENTS

4.1 Data Origination Requirements

4.1.1 Data shall be collected and transmitted to the AIS in accordance with the accuracy requirements and integrity classification specified in Appendix 1.

4.1.2 ~~The order of accuracy for aeronautical data shall be as specified in Annex 11, Chapter 2, and Annex 14, Volumes I and II, Chapter 2. In that respect, three types of positional data shall be identified: surveyed points (runway thresholds, navigation aid positions, etc.), calculated points (mathematical calculations from the known surveyed points of points in space/fixes) and declared points (e.g. flight information region boundary points).~~ Positional data shall be classified as: surveyed points (e.g. navigation aid positions, runway threshold), calculated points (mathematical calculations from the known surveyed points of points in space, fixes) or declared points (e.g. flight information region boundary points).

4.1.3 ~~World Geodetic System — 1984 (WGS 84) shall be used as the horizontal (geodetic) reference system for international air navigation. Consequently, published aeronautical geographical coordinates (indicating latitude and longitude) shall be expressed in terms of the WGS 84 geodetic reference datum.~~ Geographical coordinates indicating latitude and longitude shall be determined and reported to the AIS in terms of the World Geodetic System – 1984 (WGS-84) geodetic reference datum.

4.1.4 ~~Geographical coordinates that have been transformed into WGS-84 coordinates but whose accuracy of original field work does not meet the requirements in Annex 11, Chapter 2, and Annex 14, Volumes I and II, Chapter 2, shall be identified by an asterisk.~~ Geographical coordinates that have been transformed into WGS-84 coordinates by mathematical means and whose accuracy of original field work does not meet the applicable requirements contained in Appendix 1 shall be identified.

4.1.5 At those geographical positions where the accuracy of EGM-96 does not meet the accuracy requirements for elevation and geoid undulation specified in ~~Annex 14, Volumes I and II, Appendix 1,~~ on the basis of EGM-96 data, regional, national or local geoid models containing high resolution (short

wavelength) gravity field data shall be developed and used. When a geoid model other than the EGM-96 model is used, a description of the model used, including the parameters required for height transformation between the model and EGM-96, shall be provided in the Aeronautical Information Publication (AIP).

Note.— Specifications concerning the determination and reporting (accuracy of field work and data integrity) of elevation and geoid undulation at specific positions at aerodromes/heliports are given in Annex 14, Volumes I and II, Chapter 2, and Table A5-2 and Table 2 of Appendices 5 and 1, respectively Appendix 1.

4.1.6 In addition to elevation referenced to the MSL (geoid), for the specific surveyed ground positions, geoid undulation (referenced to the WGS-84 ellipsoid) for those positions specified in Appendix 4 shall also be published.

Origin	Rationale – Data origination requirements
AIS-AIMSG	The scope of aeronautical data, information and associated metadata is described in Chapter 4 of Annex 15. The proposed PANS-AIM, Chapter 4 describes how data should be collected.

INITIAL PROPOSAL 11 - Digital Datasets

CHAPTER 5 –AERONAUTICAL INFORMATION PRODUCTS AND SERVICES

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5.2.1 Aeronautical Information Publication (AIP)

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5.2.1.1 Contents

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5.2.1.1.3 When the AIP Data Set (as specified in 5.3.3.1) is provided, the following sections of the AIP may be left blank and reference to the data set availability shall be provided:

1. ENR 2.1 FIR, UIR, TMA

2. ENR 3.1 Lower ATS routes

3. ENR 3.2 Upper ATS routes

4. ENR 3.3 Area navigation (RNAV) routes

5. ENR 3.4 Helicopter routes

6. ENR 3.5 Other routes

7. ENR 3.6 En-route holding

8. ENR 4.1 Radio navigation aids – en-route

9. ENR 4.4 Name-code designators for significant points

10. ENR 4.5 Aeronautical ground lights – en-route

11. ENR 5.1 Prohibited, restricted and danger areas

12. ENR 5.2 Military exercise and training areas and air defence identification zone (ADIZ)

13. ENR 5.3.1 Other activities of a dangerous nature

14. ENR 5.5 Aerial sporting and recreational activities

15. **** AD 2.19 Radio navigation and landing aids

16. **** AD 3.18 Radio navigation and landing aids

5.2.1.1.4 When the Obstacle Data Set (as specified in 5.3.3.2.2) is provided, the following sections of the AIP may be left blank and a reference to the data set availability shall be provided:

17. ENR 5.4 Air Navigation obstacles

18. **** AD 2.10 Aerodrome obstacles

19. **** AD 3.10 Heliport obstacles

...

5.3 Digital Data

5.3.1 General provisions

5.3.1.1 The ISO 19100 series of standards for geographic information shall be used as a reference framework.

Note.— This is intended to facilitate and support the use and exchange of ~~aerodrome mapping data~~ digital data sets between data providers and data users.

5.3.1.2 A ~~comprehensive statement~~ description of available ~~electronic terrain and obstacle~~ digital data sets shall be provided in the form of ~~terrain~~ data product specifications ~~as well as obstacle data product specifications~~ on which basis air navigation users will be able to evaluate the products and determine whether they fulfil the requirements for their intended use (application).

Note 1.— ISO Standard 19131 ~~specifies the requirements and outline of data product specifications for geographic information~~ outlines the specifications of geographic data products.

Note 2.— This may includes an overview, specification scope, data product identification, data content and structure, reference system, data quality, data capture, data maintenance, data portrayal, data product delivery, additional information, and metadata.

5.3.1.3 The aeronautical information model used should encompass the aeronautical data and aeronautical information to be exchanged.

5.3.1.4 The aeronautical information model used should:

- a) use the Unified Modelling Language (UML) to describe the aeronautical information features and their properties, associations and data types;
- b) include data value constraints and data verification rules;
- c) include provisions for metadata as specified in 3.4.2-5.3.2; and
- d) include a temporality model to enable capturing the evolution of the properties of an aeronautical information feature during its life cycle.

5.3.1.5 The aeronautical data exchange model used should:

- a) apply a commonly used data encoding format;
- b) cover all the classes, attributes, data types and associations of the aeronautical information model detailed in 3.6.5 5.3.1.4; and
- c) provide an extension mechanism by which groups of users can extend the properties of existing features and add new features which do not adversely affect global standardization.

Note 1.— The intent of using a commonly used data encoding format is to ensure interoperability of aeronautical data exchange between agencies and organizations involved in the data processing chain.

Note 2.— Examples of commonly used data encoding formats include Extensible Markup Language (XML), Geography Markup Language (GML), and JavaScript Object Notation (JSON).

5.3.2 Metadata

5.3.2.1 Each data set shall include the following minimum set of metadata:

- a) the name of the organization or entities providing the data set;
- b) the date and time when the data set was provided;
- c) validity of the data set; and
- d) any limitations with regard to the use of the data set.

5.3.3 Data sets

Note. – A data subject may appear in multiple data sets.

5.3.3.1 AIP data set

Note. – The purpose of the AIP data set is to support the initial 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 actually being used in digital format by service providers, ATC and IFR/VFR airspace users.

5.3.3.1.1 The AIP data set shall include data about the following subjects, with the properties indicated in brackets being included as a minimum (if applicable):

- a) ATS airspace (type, name, lateral limits, vertical limits, class of airspace);
- b) Special activity airspace (type, name, lateral limits, vertical limits, restriction, activation);
- c) Route (identifier prefix, flight rules, designator);
- d) Route segment (navigation specification, startpoint, endpoint, track, distance, upper limit, lower limit, MEA, MOCA, direction of cruising level, reverse direction of cruising level, required navigation performance);
- e) Waypoint – en-route (reporting requirement, identification, location, formation);
- f) Aerodrome/Heliport (location, identification, name, designator IATA, served city, certified ICAO, certification date, certification expiration date, control type, field elevation, reference temperature, magnetic variation, airport reference point);
- g) Runway (designator, nominal length, nominal width, surface type, strength);
- h) Runway direction (designator, true bearing, threshold, TORA, TODA, ASDA, LDA, rejected TODA);
- i) FATO (designation, length, width, threshold point);
- j) TLOF (designator, centre point, length, width, surface type);
- k) Radio navigation aid (type, identification, name, aerodrome served, hours of operation, magnetic variation, frequency/channel, position, elevation, magnetic bearing, true bearing, zero bearing direction);

Note 1.— The description of the data subjects, their properties, data type and applicable data quality requirements is provided in Appendix 1.

Note 2.— The AIP data-set includes relevant AIP Amendment and SUP information.

5.3.3.1.2 When a property is not defined for a particular occurrence of the subjects listed in 5.3.3.1.1, the AIP data sub-set shall include an explicit “not applicable” indication.

5.3.3.2 Terrain and obstacle data sets

Note.— ~~Electronic~~ Terrain and obstacle data are intended to be used in the following air navigation applications:

...

5.3.3.2.1 Terrain data sets

5.3.3.2.1.1 A terrain grid shall be angular or linear and shall be of regular or irregular shape.

Note.— In regions of higher latitudes, latitude grid spacing may be adjusted to maintain a constant linear density of measurement points.

5.3.3.2.1.2 Sets of ~~electronic~~ terrain data shall include spatial (position and elevation), thematic and temporal aspects for the surface of the Earth containing naturally occurring features such as mountains, hills, ridges, valleys, bodies of water, permanent ice and snow, and excluding obstacles. In practical terms, depending on the acquisition method used, this shall represent the continuous surface that exists at the bare Earth, the top of the canopy or something in-between, also known as “first reflective surface”.

5.3.3.2.1.3 In terrain data sets, only one feature type, i.e. terrain, shall be provided. Feature attributes describing terrain shall be those listed in ~~Table A8-3~~ Appendix 6, Table A6-1. The terrain feature attributes listed in ~~Table A8-3~~ Appendix 6, Table A6-1 represent the minimum set of terrain attributes, and those annotated as mandatory shall be recorded in the terrain data set.

5.3.3.2.1.4 ~~Electronic~~ Terrain data for each area shall conform to the applicable numerical requirements in ~~Appendix 8, Table A8-1~~ Appendix 1.

5.3.3.2.2 Obstacle data sets

5.3.3.2.2.1 Obstacle data elements are features that shall be represented in the data sets by points, lines or polygons.

5.3.3.2.2.2 In an obstacle data set, all defined obstacle feature types shall be provided and each of them shall be described according to the list of mandatory attributes provided in Appendix 86, ~~Table A8-4~~ A6-2.

Note.— By definition, obstacles can be fixed (permanent or temporary) or mobile. Specific attributes associated with mobile (feature operations) and temporary types of obstacles are annotated in Appendix 86, ~~Table A8-4~~ A6-2, as optional attributes. If these types of obstacles are to be provided in the data set, appropriate attributes describing such obstacles are also required.

5.3.3.2.2.3 ~~Electronic~~ Obstacle data for each area shall conform to the applicable numerical requirements contained in Appendix 81, ~~Table A8-2~~.

5.3.3.2.2.4 The obstacle data product specification, supported by geographical coordinates for each aerodrome included within the dataset, shall describe the following areas:

— Areas 2a, 2b, 2c, 2d;

- the take-off flight path area; and
- the obstacle limitation surfaces.

Note.— Area 4 terrain data and Area 2 obstacle data are normally sufficient to support the production of the Precision Approach Terrain Chart — ICAO. When more detailed obstacle data are required for Area 4, these may be provided in accordance with the Area 4 obstacle data requirements specified in Appendix 86, Table A8-2 A6-2. Guidance on appropriate obstacles for this chart is given in the Aeronautical Chart Manual (Doc 8697).

5.3.3.3 Aerodrome mapping data sets

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5.3.3.3.1 Aerodrome mapping data — requirements for provision

5.3.3.3.1.1 Aerodrome mapping data should be supported by electronic terrain and obstacle data for Area 3 in order to ensure consistency and quality of all geographical data related to the aerodrome.

Note 1.— Accuracy and integrity requirements for aerodrome mapping data are contained in Annex 14, Volume I, Appendix 51.

Note 2.— Electronic terrain and obstacle data pertaining to Area 3 and aerodrome mapping data may be originated using common acquisition techniques and managed within a single geographic information system (GIS).

Note 3.— ~~Supporting material with respect to the processing of electronic terrain and obstacle data and aerodrome mapping data is contained in RTCA Document DO 200A and European Organization for Civil Aviation Equipment (EUROCAE) Document ED 76 — Standards for Processing Aeronautical Data. The exact content of the aerodrome mapping data sets is defined in EUROCAE ED99 / RTCA DO 272.~~

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5.3.3.4 Instrument flight procedure design data set

Note.— The purpose of the instrument flight procedure data set is to support the initial 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 actually being used in digital format by service providers, ATC and IFR/VFR airspace users.

5.3.3.4.1 The instrument flight procedure design data set shall include data about the following data subjects, with the properties indicated in brackets being included as a minimum (if applicable):

- a) Procedure (all properties);

- b) Procedure segment (all properties);
- c) Final approach segment (all properties);
- d) Procedure fix (all properties);
- e) Procedure holding (all properties);
- f) Helicopter procedure (all properties).

Note 1.— The description of the data subjects, their properties, data type and applicable data quality requirements is provided in Appendix 1.

Note 2.— The Instrument Flight Procedure data set should also cover the data publication requirements contained in PANS-OPS, Doc 8168, Volume II.

5.4 Distribution Services

5.4.1 General

5.4.1.1 Distribution to the next intended user will differ in the delivery method applied which may either be:

- a) Physical distribution. The means by which aeronautical data and aeronautical information distribution is achieved through the delivery of a physical package, such as postal services; or
- b) 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.

5.4.1.2 Different delivery methods and data media may require different procedures to ensure the required data quality.

Note. – Further guidance on digital data set distribution can be found in the Manual on System Wide Information Management (SWIM) Concept (Doc 10039).

5.4.1.3 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.

5.4.1.4 The checklist of the data sets shall be made available through the same distribution mechanism as used for the data sets.

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CHAPTER 6 –AERONAUTICAL INFORMATION UPDATES

6.1. Aeronautical Information Product updates

6.1.1 The same update cycle shall be applied to the AIP Amendments, the AIP data set and the Instrument Flight Procedures data set in order to ensure the coherence of the data items that appear in multiple Aeronautical Information Products.

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6.1.5 Specifications for digital data updates

6.1.5.1 The update interval for the AIP data set and Instrument Flight Procedures data sets shall be specified in the data product specification.

6.1.5.2 Data sets that have been made available in advance (according to the AIRAC cycle) shall be updated with the non-AIRAC changes that occurred in between the publication and the effective date.

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APPENDIX 8. TERRAIN AND OBSTACLE DATA REQUIREMENTS

(see Annex 15, Chapter 5)

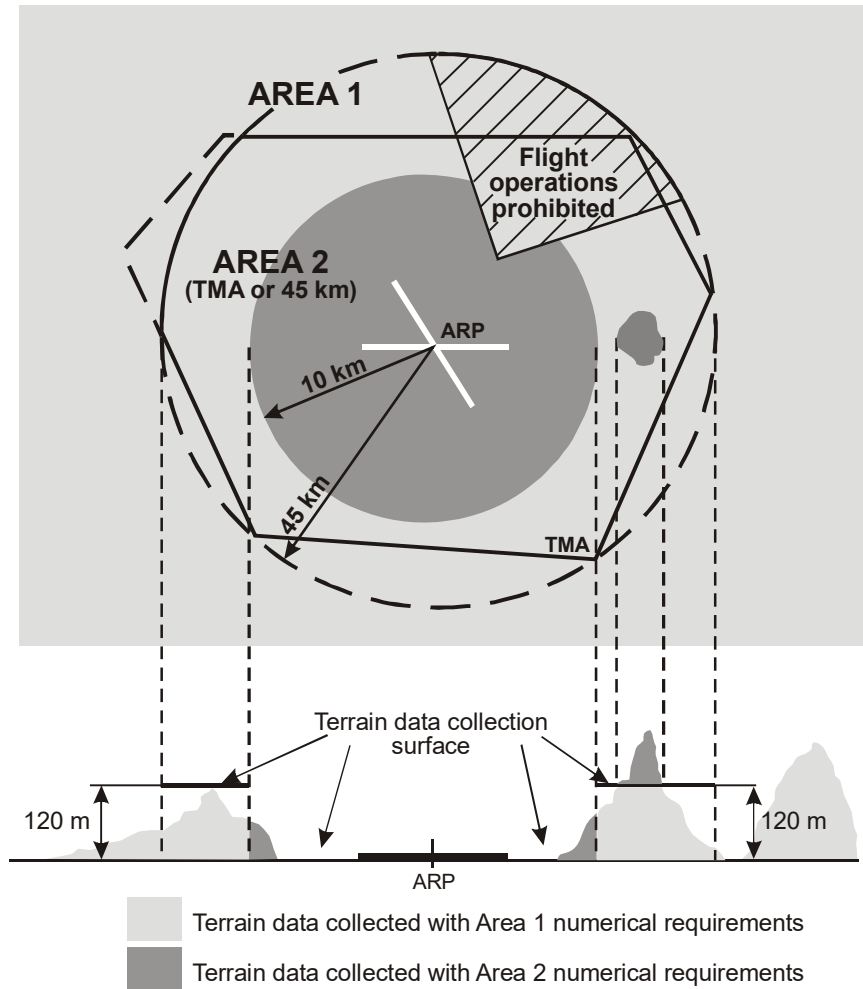


Figure A8-1. Terrain data collection surfaces — Area 1 and Area 2

1. Within the area covered by a 10-km radius from the ARP, terrain data shall comply with the Area 2 numerical requirements.
2. In the area between 10 km and the TMA boundary or 45-km radius (whichever is smaller), data on terrain that penetrates the horizontal plane 120 m above the lowest runway elevation shall comply with the Area 2 numerical requirements.
3. In the area between 10 km and the TMA boundary or 45-km radius (whichever is smaller), data on terrain that does not penetrate the horizontal plane 120 m above the lowest runway elevation shall comply with the Area 1 numerical requirements.
4. In those portions of Area 2 where flight operations are prohibited due to very high terrain or other local restrictions and/or regulations, terrain data shall comply with the Area 1 numerical requirements.

Note.— Terrain data numerical requirements for Areas 1 and 2 are specified in [Appendix 1 Table A8-1](#).

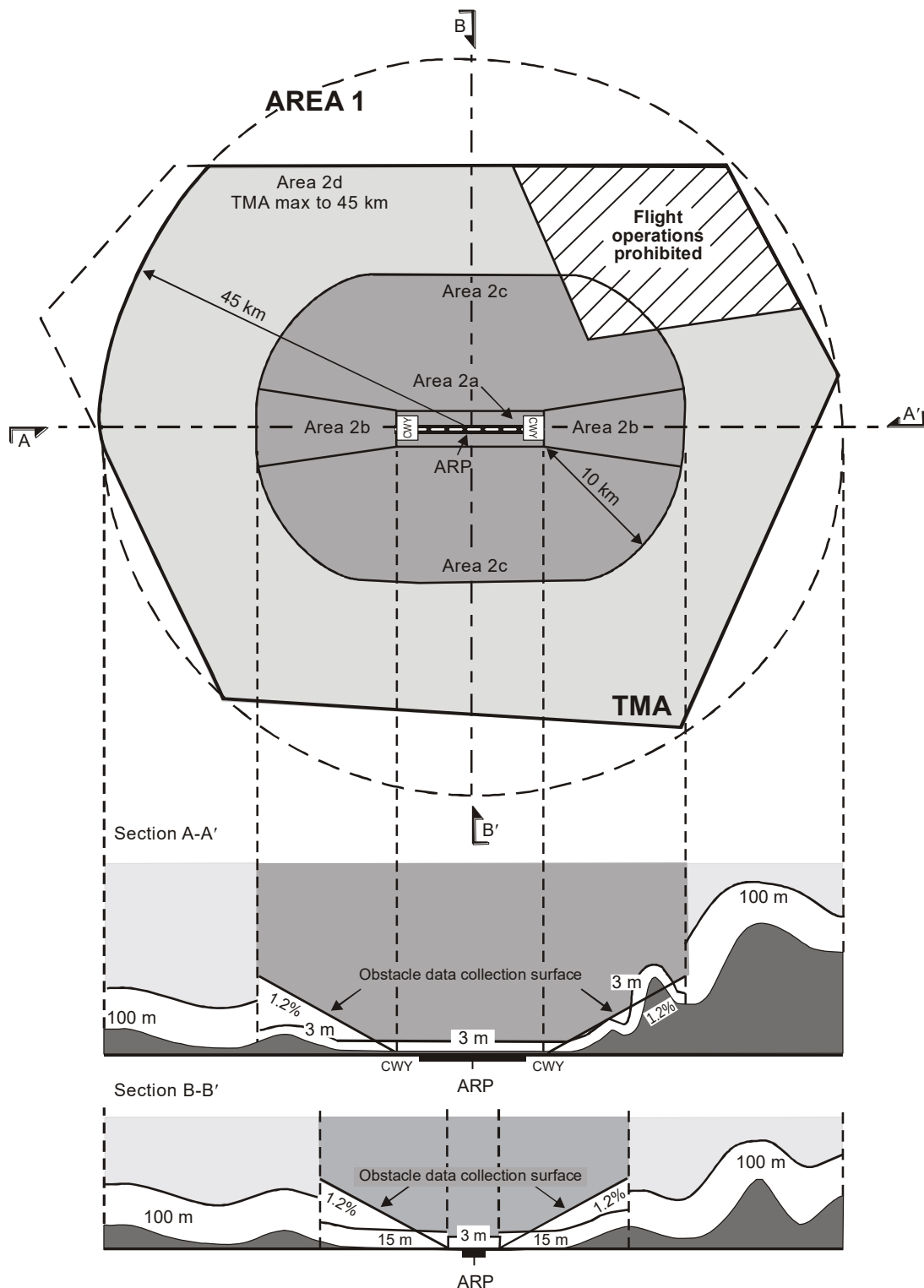


Figure A8-2. Obstacle data collection surfaces — Area 1 and Area 2

1. Obstacle data shall be collected and recorded in accordance with the Area 2 numerical requirements specified in **Appendix 1 Table A8-2**:

2. In those portions of Area 2 where flight operations are prohibited due to very high terrain or other local restrictions and/or regulations, obstacle data shall be collected and recorded in accordance with the Area 1 requirements.
3. Data on every obstacle within Area 1 whose height above the ground is 100 m or higher shall be collected and recorded in the database in accordance with the Area 1 numerical requirements specified in Appendix 1 Table A8-2.

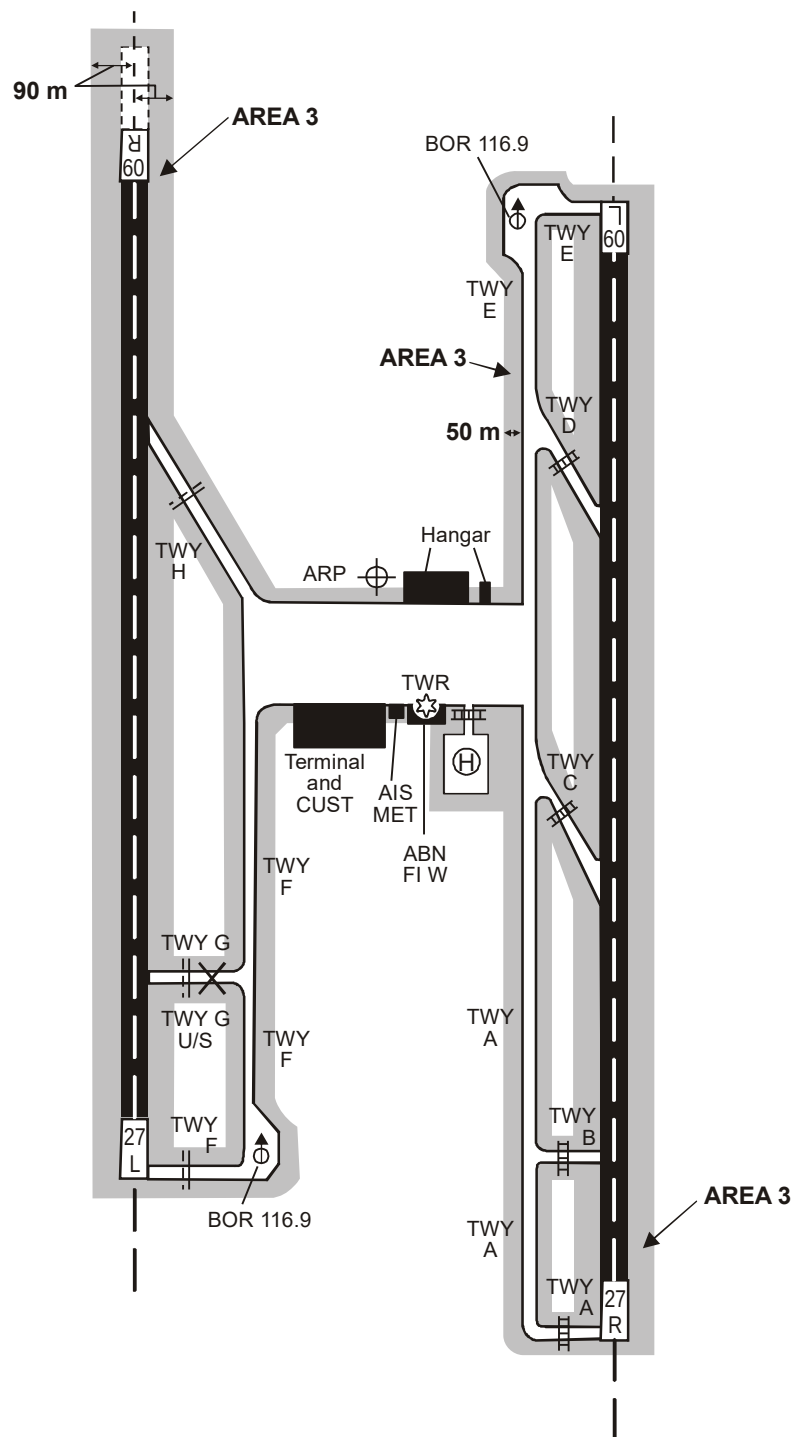


Figure A8-3. Terrain and obstacle data collection surface — Area 3

1. Terrain and obstacle data in Area 3 shall comply with the numerical requirements specified Appendix 1 in Table A8-1 and Table A8-2, respectively.

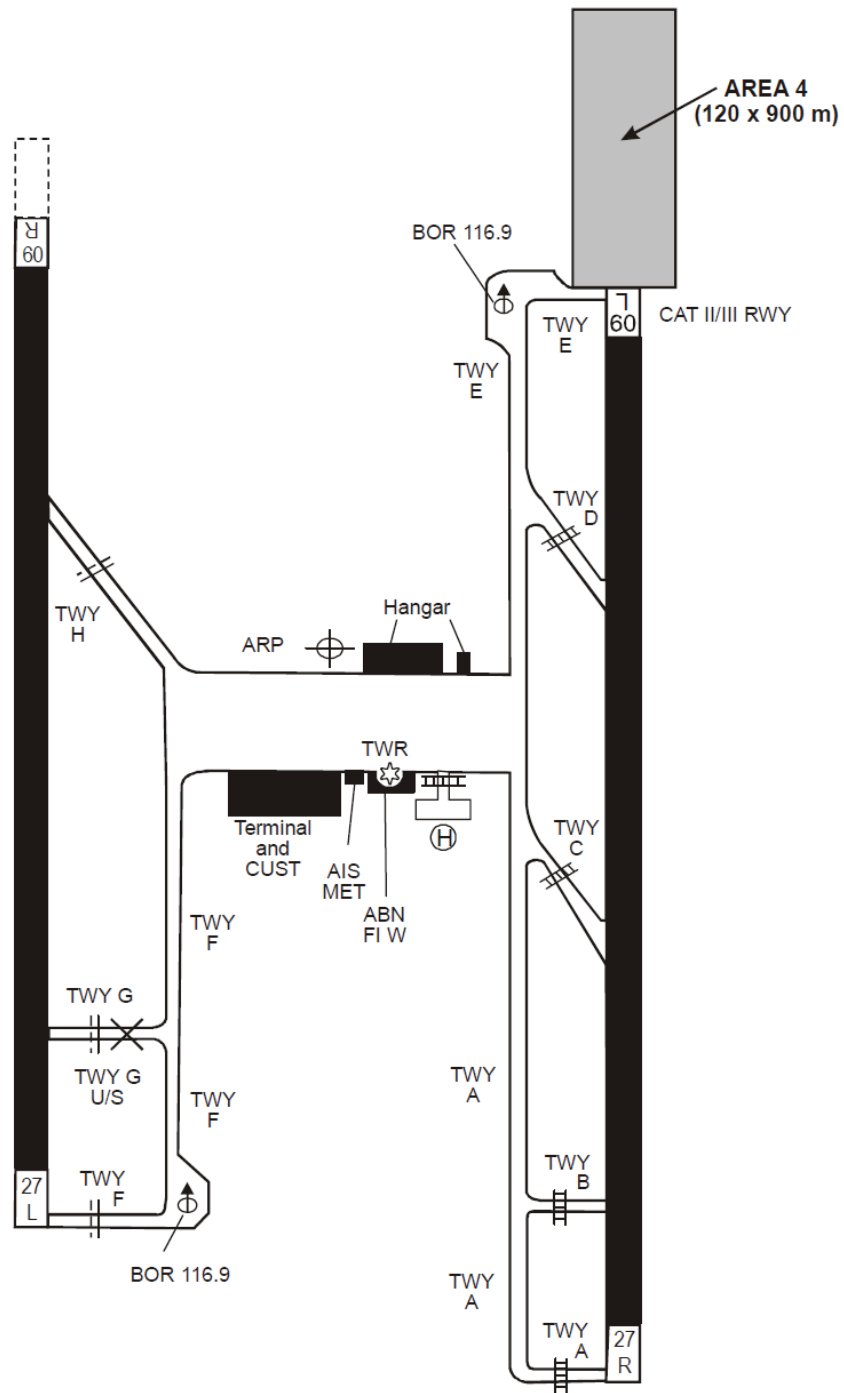


Figure A8-4. Terrain and obstacle data collection surface — Area 4

Terrain and obstacle data in Area 4 shall comply with the numerical requirements specified in [Appendix I Table A8-1](#) and [Table A8-2](#) respectively.

————— *Note.*—Area 4 may be extended in accordance with 10.1.2.

Origin	Rationale - Digital Datasets
AIS-AIMSG	The full move into an automated data centric environment requires the introduction of digital data sets. Providing the data in digital form and furthermore complying with digital data exchange requirements, such as in the use of the Aeronautical Information Exchange Model (AIXM), represents a paradigm shift in the way information is handled along its life cycle. This is an important step forward in implementation of AIM and System Wide Information Management (SWIM) since digital data is a base necessity for both concepts. Data sets, as new Aeronautical Information Products, represent a different way to provide the aeronautical information to users, so that the management, processing, verification, usage and exchange can be done in a structured, automatic manner. PANS-AIM provides a detailed description of the various thematic data-sets, specifies the minimum requirements for the metadata and details the mechanisms to update the digital data sets.

INITIAL PROPOSAL 12 - Aeronautical Information Products in a standardized presentation

CHAPTER 5 –AERONAUTICAL INFORMATION PRODUCTS AND SERVICES

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5.2 Aeronautical information in a standardized presentation

5.2.1 Aeronautical Information Publication (AIP)

5.2.1.1 Contents

5.2.1.1.1 The AIP ~~must~~ shall contain concise, current information relating to, and arranged under, the subject headings listed in ~~Annex 15~~, Appendix 12. This facilitates both the locating of information under a specific heading and the storage/retrieval of the information using automated processing.

5.2.1.1.2 If no facilities or services are provided or no information is available for publication in respect of one of the categories of information specified in ~~Annex 15~~, Appendix 12, an indication should be given as to which of these circumstances applies (e.g. “NIL” or “Not AVBL”).

...

5.2.1.2 General Specification

5.2.1.2.1 The issuing State and publishing authority ~~must~~ shall be clearly indicated ~~on the cover~~.

5.2.1.2.2 When two or more States ~~combine to issue a joint~~ jointly provide an AIP, these States shall be ~~this shall be made clear both on the cover and in the table of contents~~ clearly indicated.

5.2.1.2.3 Each AIP shall be self-contained and shall include a table of contents.

Note.— If it is necessary by reason of bulk or for convenience, to publish an AIP in two or more parts or volumes, each of them will indicate that the remainder of the information is to be found in the other part(s) or volume(s).

5.2.1.2.4 Each AIP shall not duplicate information within itself or from other sources.

5.2.1.2.5 An AIP shall ~~contain~~ be organised in three parts (GEN, ENR and AD), sections and subsections ~~uniformly referenced to allow for standardized electronic data storage and retrieval, current information relating to, and arranged under, those subjects enumerated in Appendix 1 that appear in roman type, except that~~ when the AIP, or a volume of the AIP, is designed ~~basically~~ to facilitate operational use in flight, in which case the precise format and arrangement may be left to the discretion of the State provided that an adequate table of contents is included.

5.2.1.2.6 Each AIP shall be dated.

5.2.1.2.6.1 The date, consisting of the day, month (by name) and year, shall be the publication date or the effective date (AIRAC) of the information.

5.2.1.2.7 Charts, maps or diagrams shall be used, when appropriate, to complement or as a substitute for the tabulations or text of AIP.

Note.— Where appropriate, charts produced in conformity with Annex 4, may be used to fulfil this requirement. Guidance material as to the specifications of index maps and diagrams included in AIP is contained in the Aeronautical Information Services Manual (Doc 8126).

5.2.1.2.8 When listing locations, the city or town should 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.

~~5.2.1.2.9 Place names shall be spelt in conformity with local usage, transliterated, when necessary, into the Latin alphabet.~~ The spelling of place names shall conform with local usage, transliterated where necessary into the ISO basic Latin alphabet.

5.2.1.2.10 In the indication of the geographical coordinates of a location:

- the latitude should be given first;
- symbols for degrees, minutes or seconds should be omitted;
- two digits should always be used in expressing values of less than 10 degrees of latitude; and
- three digits should always be used in expressing values of less than 100 degrees of longitude;
- the letters N, S, E, W to indicate the cardinal points of the compass to the latitude and longitude as appropriate.

~~5.2.1.2.11 When describing periods of activity, availability or operation, use of the term “weekday” should be avoided and the day or days in question should be specified.~~ the applicable days and times shall be specified.

5.2.1.2.12 The units of measurement selected for use in the AIP, e.g. dimensions on aerodromes, distances, elevations or altitudes, should be consistently followed and should adhere to Annex 5.

5.2.1.2.13 Index maps and diagrams included in the AIP should comply with the following specifications:

- a) *Base map:* The base map should be an outline map of the area adapted from existing material with general details. Graticules, topography and other details should be as simple as possible to permit rapid reproduction and amendment. Political subdivisions should be shown and identified. It should be produced in one colour.
- b) *Sheet size and scale:* The overall dimensions should be 210 mm × 297 mm. If a larger map is required, it should be folded to conform to this size. A uniform scale should be used for all charts produced as a series and other charts where practicable.
- c) *Title and marginal notes:* The title should be shown on the top border and should be as short and

simple as possible.

- d) *Colours*: The number of colours used should be kept to a minimum. If more than one colour is used, the colours should offer adequate contrast.
- e) *Symbols*: Symbols should conform, where practicable, to the ICAO Chart symbols shown in Annex 4, Appendix 2. The basic, general purpose symbols for AIP index maps are a ~~closed~~ filled circle ● and an ~~open~~ empty circle ○. Except when the symbols used are self-explanatory, a legend should be provided. For details for which no ICAO symbol has been provided, any appropriate symbol may be chosen provided it does not conflict with an ICAO symbol.

5.2.1.3 Specifications for AIP Amendments

5.2.1.3.1 The AIP shall be amended or reissued at such regular intervals as ~~may be necessary~~ to ensure the information contained in the AIP is complete and ~~to keep them~~ up to date.

5.2.1.3.2 Operationally significant changes to the AIP shall be published in accordance with AIRAC procedures and shall be clearly identified by the acronym — AIRAC.

5.2.1.3.3 When a State has established the regular interval or publication dates for its AIP Amendments, these intervals or publication dates ~~must be published~~ shall be included in the AIP, Part 1 — General (GEN).

5.2.1.3.4 New or revised information contained in the AIP shall be identified.

5.2.1.3.5 Each AIP Amendment shall be allocated a serial number, which shall be consecutive.

5.2.1.3.6 Each AIP Amendment ~~page, including the cover sheet,~~ shall ~~display~~ contain a publication date.

5.2.1.3.7 Each AIRAC AIP Amendment ~~page, including the cover sheet,~~ shall ~~display~~ contain an effective date.

5.2.1.3.7.1 When an effective time other than 0000 UTC is used, the effective time shall also be ~~displayed on the cover sheet~~ indicated.

5.2.1.3.8 When an AIP Amendment is issued, it shall include references to the serial number of ~~those elements, if any, of the Integrated Aeronautical Information Package~~ the AIP Supplement or NOTAM which have been incorporated into the amendment.

5.2.1.3.9 A brief indication of the subjects affected by the amendment shall be given on the AIP Amendment cover sheet.

5.2.1.3.10 Each amendment ~~must~~ shall include a checklist giving the current date of each loose-leaf page in the AIP, ~~unless there are only two or three replacement sheets involved,~~ and ~~must~~ shall provide a recapitulation of any outstanding manuscript corrections. The checklist ~~must~~ shall carry both the page number and date.

5.2.1.4 Specifications for AIP Supplements

Note. — Since the AIP is ~~an operational document and therefore~~ 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. The purpose of an AIP Supplement is to bring to the attention of users both temporary changes of long duration (three months or longer) and information of short duration containing extensive text or graphics which affect one or more parts of the AIP.

5.2.1.4.1 Each AIP Supplement shall be allocated a serial number which shall be consecutive and based on the calendar year.

Note. — Guidance material on the use of AIP Supplements together with examples of such use is contained in the Aeronautical Information Services Manual (Doc 8126).

5.2.1.4.2 Each AIP Supplement shall be provided on distinctive pages allowing for easy identification from the regular AIP content.

5.2.1.4.3 ~~When~~ Whenever an AIP Supplement is ~~sent~~ issued in as a replacement of a NOTAM, it shall include a reference to the ~~serial~~ series and number of the NOTAM shall be included.

5.2.1.4.4 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 at 5.2.5.3 and with distribution as for the AIP Supplements. ~~This information shall be issued through the medium of the monthly plain language list of valid NOTAM required by 5.2.13.3.~~

5.2.2 Aeronautical Information Circulars (AIC)

5.2.2.1 An AIC shall be ~~originated~~ provided whenever it is desirable to promulgate:

- ~~a) a long term forecast of any major change in legislation, regulations procedures, or facilities;~~
- ~~b) information of a purely explanatory or advisory nature liable to affect flight safety;~~
- ~~c) information or notification of an explanatory or advisory nature concerning technical, legislative or purely administrative matters.~~

~~This shall include:~~

- 1) a) forecasts of important changes in the air navigation procedures, services and facilities provided;
- 2) b) forecasts of implementation of new navigation systems;
- 3) c) significant information arising from aircraft accident/incident investigation which has a bearing on flight safety;
- 4) d) information on regulations relating to the safeguarding of international civil aviation

against acts of unlawful interference;

- 5) e) advice on medical matters of special interest to pilots;
- 6) f) warnings to pilots concerning the avoidance of physical hazards;
- 7) g) effect of certain weather phenomena on aircraft operations;
- 8) h) information on new hazards affecting aircraft handling techniques;
- 9) i) regulations relating to the carriage of restricted articles by air;
- 10) j) reference to the requirements of, and publication of changes in, national legislation;
- 11) k) aircrew licensing arrangements;
- 12) l) training of aviation personnel;
- 13) m) application of, or exemption from, requirements in national legislation;
- 14) n) advice on the use and maintenance of specific types of equipment;
- 15) o) actual or planned availability of new or revised editions of aeronautical charts;
- 16) p) carriage of communication equipment;
- 17) q) explanatory information relating to noise abatement;
- 18) r) selected airworthiness directives;
- 19) s) changes in NOTAM series or distribution, new editions of AIP or major changes in their contents, coverage or format;
- 20) t) advance information on the snow plan (see 5.2.2.2 7.1.1.2);
- 21) u) other information of a similar nature.

5.2.2.2 The snow plan ~~published~~ issued under AD 1.2.2 of the AIP ~~Appendix 1~~ shall be supplemented by seasonal information, to be issued well in advance of the beginning of each winter — not less than one month before the normal onset of winter conditions — and shall contain information such as that listed below:

...

5.2.2.3 The originating ~~aeronautical information service~~ State shall select the AIC that are to be given international distribution.

5.2.2.4 States shall give AIC selected for international distribution the same distribution as for the AIP.

5.2.2.5 Distribution of AIC on a national basis is left to the discretion of the originating State concerned.

5.2.2.6 Each AIC shall be allocated a serial number which shall be consecutive and based on the calendar year.

Note.— 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.

5.2.2.7 ~~When~~ In the event that AIC are distributed provided in more than one series, each series shall be separately identified by a letter (A 2/02, B 4/02, etc.).

5.2.2.8 A checklist of AIC currently in force shall be issued at least once a year, with distribution as for the AIC.

5.2.2.9 A checklist of NOTAM shall refer to the latest AIP Amendments, AIP Supplements and ~~at least the internationally distributed AIC~~ provided internationally shall be included in the NOTAM checklist.

5.2.3 Printed products

5.2.3.1 Printed AIP

5.2.3.1.1 ~~AIP should be published in loose-leaf form unless the complete publication is reissued at frequent intervals.~~ When the AIP is issued as a printed volume, it should be published in loose-leaf form unless the complete publication is reissued at frequent intervals.

5.2.3.1.2 Each AIP issued as a ~~bound~~ printed volume and each page of an AIP issued in loose-leaf form shall be so annotated as to indicate clearly:

- a) the identity of the AIP;
- b) the territory covered and subdivisions when necessary;
- c) the identification of the issuing State and producing organization (authority);
- d) page numbers/chart titles;
- e) ~~the degree of reliability if the information is doubtful.~~

5.2.3.1.3 The issuing State and the publishing authority or the joint issuing States shall ~~must~~ be clearly indicated on the cover and in the table of contents. ~~When two or more States publish an AIP jointly, this must also be clearly indicated both on the cover and in the table of contents.~~

5.2.3.1.4 The normal method of amendment of the printed volume AIP shall be by means of replacement sheets.

5.2.3.1.5 New or revised information ~~contained in the AIP replacement pages~~ shall ~~must~~ be identified by an annotation against it in the margin. A thick black vertical line or, where the change incorporated covers one line only or a part of a line, a thick black horizontal arrow, is sufficient to identify the change.

5.2.3.1.6 Each AIP Amendment page, including the cover sheet, shall ~~must~~ ~~contain show~~ a publication date and, when applicable, an effective date. ~~Each AIRAC AIP Amendment page, including the cover sheet must show a publication date and an effective date.~~

5.2.3.1.7 ~~Many States will be able to produce the AIP in one volume. Where this is not practicable and the AIP is produced and made available in more than one volume, each volume must include a separate amendment and supplement service, and the following separate sections must be included in each volume.~~ When the AIP is provided in more than one volume, each volume shall include:

- Preface
- Record of AIP Amendments
- Record of AIP Supplements
- Checklist of AIP pages
- List of current hand amendments.

5.2.3.1.8 When the AIP is published as one volume, the above-mentioned subsections appear only in Part 1 — GEN and the annotation “not applicable” ~~must~~ shall be entered against each of these subsections in Parts 2 and 3.

5.2.3.1.9 A system of page numbering adaptable to the addition or deletion of sheets should be adopted. The page number should include:

- an identification of the part of the AIP;
- the section; and
- subsection, as applicable;

thus creating a separate set of numbers for each subject (e.g. GEN 2.1-3, ENR 4.1-1 or AD 2.2-3).

5.2.3.1.10 A checklist giving the current date of each page in the AIP series shall be reissued frequently to assist the user in maintaining a current publication.

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5.2.3.1.13 Maps and charts included in the AIP should be paginated in the same manner as other material.

...

5.2.3.1.15 AIP Supplement pages should be kept as the first item in the AIP parts.

Note.— As alternate to eliminate the need to continuously refer to the front of the AIP for the required information, the Supplements may be divided into specific parts (e.g GEN, ENR, AD) for insertion in each AIP part, as necessary.

5.2.3.1.16 AIP Supplement pages shall be kept in the AIP as long as all or some of their contents remain valid.

5.2.3.1.17 Each AIP Supplement page ~~must~~ shall show a publication date.

5.2.3.1.18 Each AIRAC AIP Supplement page ~~must~~ shall show a publication date and an effective date.

5.2.3.2 Printed AIC

5.2.3.2.1 **Recommendation.**—Differentiation and identification of AIC topics according to subjects using colour coding should be practised where the numbers of AIC in force are sufficient to make identification in this form necessary.

5.2.3.2.2 ~~In addition,~~ It is highly recommended that AIC be colour coded by subject where there are sufficient circulars in force to warrant such identification, e.g.:

- a) white — administrative;
- b) yellow — ATC;
- c) pink — safety;
- d) mauve — danger area map; and
- e) green — maps/charts.

5.2.4 Electronic AIP (eAIP)

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Note 1.— This composite electronic document is named “Electronic AIP” (eAIP) and may be based on a format that allows for digital data exchange.

Note 2.— Guidance material for the production and provision of the eAIP is contained in Doc 8126.

5.2.4.1 When provided, the information content of the eAIP and the structure of chapters, sections and sub-sections shall follow the content and structure of the paper AIP. The eAIP shall include files that allow for printing a paper AIP.

5.2.4.2 New or revised information shall be identified either by an annotation against it in the margin or by a mechanism that allows comparing the new/revised information with the previous one.

5.2.4.3 When provided, the eAIP should be available on a physical distribution medium (CD, DVD, etc.) and/or online on the Internet.

Note.— Guidance material on the use of the Internet is contained in Guidelines on the Use of the Public Internet for Aeronautical Applications (Doc 9855).

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CHAPTER 6 –AERONAUTICAL INFORMATION UPDATES

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6.1.2 Specifications for AIP Amendments

6.1.2.1 The AIP amendment regular interval referred to in 4.2.9 shall be specified in the AIP, Part 1 — General (GEN).

Note. — Guidance material on the establishment of intervals between publication dates of AIP Amendments is contained in Doc 8126.

6.1.2.2 When an AIP Amendment will not be published at the established interval or publication date, a NIL notification shall be originated and distributed by the monthly plain language list of valid NOTAM checklist required by 5.2.13.3.

6.1.2.3 Recourse to hand amendments or annotations shall be kept to a minimum.

6.1.2.4 When the AIP is provided in more than one volume, each volume should include separate amendment services.

Origin AIS-AIMSG	Rationale – Aeronautical Information Products in a standardized presentation Chapters 5 and 6 specify the characteristics of Aeronautical Information Products and Services and the associated update mechanism. The Aeronautical Information Products still comprise products in a standardized presentation such as AIP, AIP Supplements, AIC in paper or electronic form. The transition from AIS product-centric to AIM data-centric environment still requires the need for the “legacy products” to be provided and maintained. These paragraphs indicate that the transition from AIS to AIM is an evolutionary process and that continuity is maintained. Most of the material provided in these paragraphs is text relocated from Annex 15 and Doc 8126. The language has been adapted accordingly for requirements from Doc 8126 that have been elevated to the status of PANS. Requirements are eventually clarified and better expressed in order to promote a better understanding and to support implementation.

INITIAL PROPOSAL 13 - Pre-flight Information Services

CHAPTER 5 –AERONAUTICAL INFORMATION PRODUCTS AND SERVICES

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5.5 Pre-flight information services

5.5.1 Geographic coverage for pre-flight information services should be determined and periodically reviewed. In general, the coverage zone should be limited to the 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.

5.5.2 Although miscellaneous NOTAM is 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.

5.5.3 Automated pre-flight information systems shall be used to make aeronautical data and aeronautical information available to operations personnel including flight crew members for self-briefing, flight planning and flight information service purposes. The aeronautical data and aeronautical information made available shall comply with the provisions of 8.1.2 and 8.1.3 Annex 15.

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5.5.6 Automated pre-flight information systems providing a harmonized, common point of access by operations personnel, including flight crew members and other aeronautical personnel concerned, to aeronautical information in accordance with 5.5.3 8.2.1 and meteorological information in accordance with 9.4.1 of Annex 3 — *Meteorological Service for International Air Navigation*, should be established by an agreement between the civil aviation authority or the agency to which the authority to provide service has been delegated in accordance with 2.1.1 c) and the relevant meteorological authority.

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Origin	Rationale – Pre-flight Information Services
AIS-AIMSG	The purpose of the proposed changes is mostly to make the requirements more distinct and to provide clarification about the availability of NOTAM for briefing purposes scoped as Miscellaneous 'M'. In addition, references to specific chapters need to be updated due to the restructuring of Annex 15.

INITIAL PROPOSAL 14 - NOTAM - Improvement proposals

CHAPTER 5 –AERONAUTICAL INFORMATION PRODUCTS AND SERVICES

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5.2.5 NOTAM

5.2.5.1 General specifications

5.2.5.1.1 Except as otherwise provided in ~~5.2.3~~ 5.2.5.1.5 and ~~5.2.4~~ 5.2.5.1.6, each NOTAM shall contain the information in the order shown in the NOTAM Format in Appendix ~~36~~.

Note.— Detailed guidance material covering NOTAM, SNOWTAM, ASHTAM and pre-flight information bulletin (PIB) production is contained in Doc 8126.

5.2.5.1.2 ~~Text of~~ 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.

Note. — The ICAO NOTAM Code together with significations/uniform abbreviated phraseology, and ICAO Abbreviations are those contained in the Procedures for Air Navigation Services — ICAO Abbreviations and Codes (PANS-ABC, Doc 8400).

5.2.5.1.3 ~~When NOTAM are selected for international distribution, English text shall be included for those parts expressed in plain language.~~ All NOTAM shall be issued in the English language.

Note.— If necessary for domestic users, NOTAM may additionally be issued in a national language.

5.2.5.1.4 Information concerning snow, slush, ice and standing water on aerodrome/heliport pavements ~~shall~~, when reported by means of a SNOWTAM, ~~shall~~ contain the information in the order shown in the SNOWTAM Format in Appendix ~~24~~.

5.2.5.1.5 Information concerning an operationally significant change in volcanic activity, a 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 ~~35~~.

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5.2.5.1.14 Where no ICAO location indicator is assigned to the location, its place name ~~spelt in accordance with 1.3.2~~ shall be entered in plain language, ~~spelt in conformity with local usage, transliterated, when necessary, into the ISO Basic-Latin alphabet.~~

5.2.5.2 NOTAM number and series allocation

5.2.5.2.1 The ~~International NOTAM originator~~ 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.

5.2.5.2.2 Letters ~~A to Z, with the exception of~~ S and T, ~~may~~ shall not be used to identify a NOTAM series.

5.2.5.2.3 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.

5.2.5.2.4 If NOTAM is issued in both English and a national language, the NOTAM series shall be organized so that the national language series are equivalent to the English language series in terms of content and numbering.

5.2.5.2.5 The content and geographical coverage of each NOTAM series shall be stated in detail in the AIP, GEN 3.

5.2.5.2.6 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.

5.2.5.3 NOTAM Checklist

5.2.5.3.1 A checklist of valid NOTAM shall be issued as a NOTAM checklist ~~over the Aeronautical Fixed Service (AFS) at intervals of not more than one month using the NOTAM Format specified in Appendix 6.~~

Note.— Omitting a NOTAM from the checklist does not ~~serve to~~ cancel a NOTAM.

5.2.5.3.2 One NOTAM checklist shall be issued for each series.

5.2.5.3.3 A ~~checklist of~~ 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.

5.2.5.3.4 A ~~checklist of~~ NOTAM checklist shall have the same distribution as the actual message series to which they refer and shall be clearly identified as a checklist.

5.4 Distribution Services

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5.4.2 NOTAM distribution

5.4.2.1 An aeronautical information service shall arrange, as necessary, to satisfy operational requirements for the issuance and receipt of NOTAM distributed by telecommunication.

Note.— Arrangements may be made for direct exchange of SNOWTAM (see Appendix 24) between aerodromes/heliports.

5.4.2.2 The international exchange of ASHTAM (see 5.2.4-5.2.5.1.6), and NOTAM where States continue to use NOTAM for distribution of information on volcanic activity, shall include volcanic ash advisory centres and the centres designated by regional air navigation agreement for the operation of AFS satellite distribution systems (satellite distribution system for information relating to air navigation Secure Aviation Data Information Service (SADIS) and international satellite communications system (ISCS)) the World Area Forecast System (WAFS) Internet file service (WIFS), and shall take account of the requirements of long-range operations.

5.4.2.3 These The exchanges of NOTAM between international NOTAM offices and between the international NOTAM offices and multinational NOTAM Processing Units shall, as far as practicable, be limited to the requirements of the receiving States concerned by means of separate series providing for at least international and domestic flights cover the needs of operations personnel including flight crew members.

5.4.2.4 A predetermined distribution system for NOTAM transmitted on the AFS in accordance with Appendix 5 Annex 15, 6.3.2.3 shall be used whenever possible, subject to the requirements of 5.3.4 5.4.2.3.

5.4.2.5 The originating State shall upon request grant distribution select the of NOTAM series that are to be given international distribution other than those distributed internationally.

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CHAPTER 6 –AERONAUTICAL INFORMATION UPDATES

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6.1.4 Specifications for NOTAM

6.1.4.1 NOTAM should be published with sufficient lead time for the affected parties to take any required action, except in the case of unserviceability, volcanic activity, release of radioactive material, toxic chemicals and other events that cannot be foreseen.

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6.1.4.5 Within three months from the issuing of a permanent NOTAM, the information contained in the NOTAM shall be included in the Aeronautical Information Products affected.

6.1.4.6 Within three months from the issuing of a temporary NOTAM of long duration, the

information contained in the NOTAM shall be included in the AIP Supplement.

6.1.4.7 When a NOTAM with estimated end of validity unexpectedly exceeds the three-month period, a replacement NOTAM shall be issued, unless the condition is expected to last for a further period of more than three months; in this case, an AIP Supplement shall be issued.

6.1.4.8 When an AIP Amendment or an AIP Supplement is published in accordance with AIRAC procedures, a so-called “Trigger” NOTAM shall be originated giving a brief description of the contents, the effective date and time, and the reference number of the amendment or supplement.

6.1.4.9 This NOTAM shall come into force on the same effective date and time as the amendment or supplement and shall remain valid in the pre-flight information bulletin for a period of fourteen days.

6.1.4.10 In the case of an AIP Supplement, a “Trigger ”NOTAM shall remain valid for a period of fourteen days.

6.1.4.11 In the case of an AIP Supplement that is valid for less than fourteen days, the “Trigger” NOTAM shall remain valid for the complete validity period of the AIP Supplement.

6.1.4.12 In the case of an AIP Supplement that is valid for fourteen days or more, the “Trigger” NOTAM shall remain valid for at least fourteen days.

Note.— Guidance material for the origination of NOTAM announcing the existence of AIRAC AIP Amendments or AIP Supplements (“Trigger NOTAM”) is contained in the Aeronautical Information Services Manual (Doc 8126).

Origin	Rationale – NOTAM - Improvement proposals
AIS-AIMSG	The requirement to deliver complete, consistent and fit for purpose NOTAM information, including States obligations for timely distribution, language used and NOTAM series management and allocation has been reinforced by the proposed amendment. Various refinements to a number of provisions are proposed, including better specifying the role of the Trigger NOTAM.

INITIAL PROPOSAL 15 - Introduction of a data catalogue

CHAPTER 5 –AERONAUTICAL INFORMATION PRODUCTS AND SERVICES

5.1 General

5.1.1 Aeronautical data shall be provided in accordance with the resolution requirements contained in Appendix 1.

5.1.2 Geographical coordinates whose accuracy does not meet the requirements specified in Appendix 1 shall be identified.

5.1.3 The identification of geographical coordinates whose accuracy does not meet the requirements may be made either with an annotation or by explicitly providing the actual accuracy value.

5.1.3.1 In Aeronautical Information Products that are distributed on paper, the identification should be done with an asterisk following the coordinate value concerned.

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APPENDIX 1. AERONAUTICAL DATA CATALOGUE

Note 1.— The Aeronautical Data Catalogue is available electronically and will be provided as part of the PANS-AIM.

Note 2.— The Data Catalogue is a general description of the AIM data scope and consolidates all data that can be collected and maintained by the aeronautical information service. It provides a reference for aeronautical data origination and publication requirements.

Note 3.— The Data Catalogue provides a means for States to facilitate the identification of the organizations and authorities responsible for the origination of the aeronautical data and information. It is also providing a common language and facilitating the formal arrangements between data originators and the aeronautical information service. It includes data quality requirements applicable from origination through to publication.

Note 4.— The Data Catalogue is a reference of the aeronautical data subjects, properties and sub-properties organized in:

Table A1-1	Aerodrome data;
Table A1-2	Airspace data;
Table A1-3	ATS and other routes data;
Table A1-4	Instrument flight procedure data;
Table A1-5	Radio navigation aids/systems data;
Table A1-6	Obstacle data;
Table A1-7	Geographic data;
Table A1-8	Terrain data;

Table A1-9 Data types; and

Table A1-10 Information about national and local regulation, services and procedures.

Note 5.— The Data Catalogue provides detailed descriptions of all subjects, properties and sub-properties, the data quality requirements and the data types.

Note 6.— The data types describe the nature of the property and sub-property and specify the data elements to be collected.

Note 7.— The tables of the Data Catalogue are composed of the following columns:

(1) Subject for which data can be collected

(2)(3) Property is an identifiable characteristic of a subject which can be further defined into sub-properties

The classification of a catalogue element as subject, property or sub-property does not impose a certain data model.

(4) The data is classified in different types. See Table A1-9 for more information on data types.

(5) A description of the data element

(6) Notes are additional information or conditions of the provision

(7) Accuracy requirements for aeronautical data are based upon a 95 per cent confidence level.

For those fixes and points that are serving a dual purpose, e.g. holding point and missed approach point, the higher accuracy applies.

Accuracy requirements for obstacle and terrain data are based upon a 90 per cent confidence level.

(8) Integrity classification

(9) Origination type: positional data is identified as surveyed, calculated or declared

(10) Publication resolution

The publication resolutions for geographical position data (latitude and longitude) are applicable to coordinates formatted in degrees, minutes, seconds. When a different format is used (such as degrees with decimals for digital data sets) or when the location is significantly further to the North/South, the publication resolution needs to be commensurate with the accuracy requirements.

(11) Chart resolution

Origin AIS-AIMSG	Rationale - Introduction of a data catalogue The move from the current product-centric to a data-centric environment, as proposed in the amendment to Annex 15 and the new PANS-AIM, will require the definition of the data and information scope for all data collected by the aeronautical information service. The objective of the data catalogue is to provide a general description of the AIM data scope and to consolidate all data and information that can be collected and maintained by the aeronautical information service. The data catalogue also represents a common language that facilitates the establishment of formal arrangements between data originators and the aeronautical information service. The data catalogue is the single source of all data quality requirements. The AIS-AIM SG considered moving all data quality requirements from Annex 4, Appendix 6, Annex 11, Appendix 5, Annex 14 Vol. I, Appendix 5, Annex 14 Vol. II, Appendix 1 and Annex 15, Appendices 7 and 8 to the PANS-AIM and consolidating them in a single place in the data catalogue would be beneficial in providing a central point of reference and making it easier to spot discrepancies. Additionally, it was considered easier for long-term maintenance when requirements change to ensure that changes are consistent, such as, for example between resolution and accuracy. It should be noted that the construction of Appendix 1 of PANS-AIM has not brought about any changes to the Data Quality Requirements. The information in the data catalogue will allow the verification of correctness of received data at the aeronautical information service and at next intended user and support further electronic processing without any future human intervention.

INITIAL PROPOSAL 16 - Changes to the contents of the AIP

APPENDIX 2 CONTENTS OF THE AERONAUTICAL INFORMATION PUBLICATION (AIP)

Note 1.— the information elements prefixed with “#AIP-DS#” may be left out when available through the AIP data set (as specified in Chapter 5, 5.2.1.1.3).

Note 2.— the information elements prefixed with “#OBS-DS#” may be left out when available through the Obstacle data set (as specified in Chapter 5, 5.3.3.2.2).

PART 1 — GENERAL (GEN)

When the AIP is produced as one volume, the preface, record of AIP Amendments, record of AIP Supplements, checklist of AIP pages and list of current hand amendments appear only in Part 1 — GEN, and the annotation “not applicable” ~~must~~ shall be entered against each of these subsections in Parts 2 and 3.

If an AIP is produced and made available in more than one volume with each having a separate amendment and supplement service, a separate preface, record of AIP Amendments, record of AIP Supplements, checklist of AIP pages and list of current hand amendments ~~must~~ shall be included in each volume.

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GEN 1.7 Differences from ICAO Standards, Recommended Practices and Procedures

A list of significant differences between national regulations and practices of the State and related ICAO provisions, including:

- 1) provision affected (Annex and edition number, paragraph); and
- 2) difference in full text.

All significant differences ~~must~~ shall be listed under this subsection. All Annexes ~~must~~ shall be listed in numerical order even if there is no difference to an Annex, in which case a NIL notification ~~must~~ shall be provided. National differences or the degree of non- application of the regional supplementary procedures (SUPPs) ~~must~~ shall be notified immediately following the Annex to which the supplementary procedure relates.

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GEN 2. TABLES AND CODES

GEN 2.1 Measuring system, aircraft markings, holidays

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GEN 2.1.3 Horizontal reference system

Brief description of the horizontal (geodetic) reference system used, including:

- 1) name/designation of the reference system;
- 2) identification and parameters of the projection;
- 3) identification of the ellipsoid used;
- 4) identification of the datum used;
- 5) area(s) of application; and
- 6) an explanation, if applicable, of the asterisk used to identify those coordinates that do not meet ~~Annex 11 and 14~~ the accuracy requirements.

GEN 2.1.4 Vertical reference system

Brief description of the vertical reference system used, including:

- 1) name/designation of the reference system;
- 2) description of the geoid model used including the parameters required for height transformation between the model used and EGM-96; and
- 3) an explanation, if applicable, of the asterisk used to identify those elevations/geoid undulations that do not meet ~~Annex 14~~ accuracy requirements.

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GEN 2.4 Location indicators

A list of alphabetically arranged location indicators assigned to the locations of aeronautical fixed stations to be used for encoding and decoding purposes. An annotation to locations not connected to the aeronautical fixed service (AFS) ~~must~~ shall be provided.

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GEN 3. SERVICES

GEN 3.1 Aeronautical information services

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GEN 3.1.2 Area of responsibility

The area of responsibility for the aeronautical information service.

GEN 3.1.3 Aeronautical publications

Description of the elements of the ~~Integrated Aeronautical Information Package~~ **Products**, including:

- 1) AIP and related amendment service;
- 2) AIP Supplements;
- 3) AIC;
- 4) NOTAM and pre-flight information bulletins (PIB);
- 5) checklists and lists of valid NOTAM; and
- 6) how they may be obtained.

When an AIC is used to promulgate publication prices, that ~~must~~ **shall** be indicated in this section of the AIP.

GEN 3.1.4 AIRAC system

Brief description of the AIRAC system provided including a table of present and near future AIRAC dates.

GEN 3.1.5 Pre-flight information service at aerodromes/heliports

A list of aerodromes/heliports at which pre-flight information is routinely available, including an indication of relevant:

- 1) elements of the ~~Integrated Aeronautical Information Package~~ **Products** held;
- 2) maps and charts held; and
- 3) general area of coverage of such data.

GEN 3.1.6 ~~Electronic terrain and obstacle data~~ Digital data sets

~~Details of how electronic terrain and obstacle data may be obtained, containing:~~

1) ~~name of the individual, service or organization responsible;~~ Description of the available data sets, including:

- a) data set title;
- b) short description;
- c) data subjects included;
- d) geographical scope; and
- e) if applicable, limitations related to its usage.

2) ~~street address and e-mail address of the individual, service or organization responsible;~~ Contact details of how data sets may be obtained, containing:

- a) name of the individual, service or organization responsible;
- b) street address and e-mail address of the individual, service or organization responsible;
- c) telefax number of the individual, service or organization responsible;
- d) contact telephone number of the individual, service or organization responsible;
- e) hours of service (time period including time zone when contact can be made);
- f) online information that can be used to contact the individual, service or organization; and
- g) supplemental information, if necessary, on how and when to contact the individual, service or organization.

3) ~~telefax number of the individual, service or organization responsible;~~

4) ~~contact telephone number of the individual, service or organization responsible;~~

5) ~~hours of service (time period including time zone when contact can be made);~~

6) ~~online information that can be used to contact the individual, service or organization; and~~

7) ~~supplemental information, if necessary, on how and when to contact the individual, service or organization.~~

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GEN 3.2 Aeronautical charts

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GEN 3.2.6 Index to the World Aeronautical Chart (WAC) — ICAO 1:1 000 000

An index chart showing coverage and sheet layout for the WAC 1:1 000 000 produced by a State. If Aeronautical Chart — ICAO 1:500 000 is produced instead of WAC 1:1 000 000, index charts ~~must~~ shall be used to indicate coverage and sheet layout for the Aeronautical Chart — ICAO 1:500 000.

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PART 2 — EN-ROUTE (ENR)

If an AIP is produced and made available in more than one volume with each having a separate amendment and supplement service, a separate preface, record of AIP Amendments, record of AIP Supplements, checklist of AIP pages and list of current hand amendments ~~must~~ shall be included in each volume. In the case of an AIP being published as one volume, the annotation “not applicable” ~~must~~ shall be entered against each of the above subsections.

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ENR 1.5.2 Arriving flights

The requirement is to present procedures (conventional or area navigation or both) for arriving flights which are common to flights into or within the same type of airspace. If different procedures apply within a terminal airspace, a note to this effect ~~must~~ shall be given together with a reference to where the specific procedures can be found.

ENR 2. AIR TRAFFIC SERVICES AIRSPACE

ENR 2.1 FIR, UIR, TMA AND CTA

~~#AIP-DS#~~ Detailed description of flight information regions (FIR), upper flight information regions (UIR), and control areas (CTA) (including specific CTA such as TMA), including:

- 1) name, geographical coordinates in degrees and minutes of the FIR/UIR lateral limits and in degrees, minutes and seconds of the CTA lateral limits, vertical limits and class of airspace;
- 2) identification of unit providing the service;
- 3) call sign of aeronautical station serving the unit and language(s) used, specifying the area and conditions, when and where to be used, if applicable;
- 4) frequencies, and if applicable SATVOICE number, supplemented by indications for specific purposes; and

5) remarks.

#AIP-DS# Control zones around military air bases not otherwise described in the AIP ~~must~~ **shall** be included in this subsection. Where the requirements of Annex 2 concerning flight plans, two-way communications and position reporting apply to all flights in order to eliminate or reduce the need for interceptions and/or where the possibility of interception exists and the maintenance of guard on the VHF emergency channel 121.5 MHz is required, a statement to this effect ~~must~~ **shall** be included for the relevant area(s) or portion(s) thereof.

A description of designated areas over which the carriage of an emergency locator transmitter (ELT) is required and where aircraft shall continuously guard the VHF emergency frequency 121.5 MHz, except for those periods when aircraft are carrying out communications on other VHF channels or when airborne equipment limitations or cockpit duties do not permit simultaneous guarding of two channels.

Note.— Other types of airspace around civil aerodromes/heliports such as control zones and aerodrome traffic zones are described in the relevant aerodrome or heliport section.

ENR 2.2 Other regulated airspace

Where established, a detailed description of other types of regulated airspace and airspace classification.

ENR 3. ATS ROUTES

Note 1.— Bearings, tracks and radials are normally magnetic. In areas of high latitude, where it is determined by the appropriate authority that reference to Magnetic North is impractical, another suitable reference, i.e. True North or Grid North, may be used.

Note 2.— Changeover points established at the midpoint between two radio navigation aids, or at the intersection of the two radials in the case of a route which changes direction between the navigation aids, need not be shown for each route segment if a general statement regarding their existence is made.

Note 3.— Guidance material on the organization of ATS Route publication is contained in the Aeronautical Information Services Manual (Doc 8126).

ENR 3.1 Lower ATS routes

#AIP-DS# Detailed description of lower ATS routes, including:

- 1) route designator, designation of the required communication performance (RCP) specification(s), navigation specification(s) and/or required surveillance performance (RSP) specification(s) applicable to a specified segment(s), names, coded designators or name-codes and the geographical coordinates in degrees, minutes and seconds of all significant points defining the route including “compulsory” or “on-request” reporting points;
- 2) tracks or VOR radials to the nearest degree, geodesic distance to the nearest tenth of a kilometre or tenth of a nautical mile between each successive designated significant point and, in the case of VOR radials, changeover points;

- 3) upper and lower limits or minimum en-route altitudes, to the nearest higher 50 m or 100 ft, and airspace classification;
- 4) lateral limits and minimum obstacle clearance altitudes;
- 5) direction of cruising levels;
- 6) the navigation accuracy requirement for each PBN (RNAV or RNP) route segment; and
- 7) remarks, including an indication of the controlling unit, its operating channel and, if applicable, its logon address, SATVOICE number, and any navigation, RCP and RSP specification(s) limitations.

Note.— In relation to Annex 11, Appendix 1, and for flight planning purposes, the defined navigation specification is not considered to be an integral part of the route designator.

ENR 3.2 Upper ATS routes

#AIP-DS# Detailed description of upper ATS routes, including:

- 1) route designator, designation of the required communication performance (RCP) specification(s), navigation specification(s) and/or required surveillance performance (RSP) specification(s) applicable to a specified segment(s), names, coded designators or name-codes and the geographical coordinates in degrees, minutes and seconds of all significant points defining the route including “compulsory” or “on-request” reporting points;
- 2) tracks or VOR radials to the nearest degree, geodesic distance to the nearest tenth of a kilometre or tenth of a nautical mile between each successive designated significant point and, in the case of VOR radials, changeover points;
- 3) upper and lower limits and airspace classification;
- 4) lateral limits;
- 5) direction of cruising levels;
- 6) the navigation accuracy requirement for each PBN (RNAV or RNP) route segment; and
- 7) remarks, including an indication of the controlling unit, its operating channel and, if applicable, its logon address, SATVOICE number, and any navigation, RCP and RSP specification(s) limitations.

Note.— In relation to Annex 11, Appendix 1, and for flight planning purposes, defined navigation specification is not considered to be an integral part of the route designator.

ENR 3.3 Area navigation routes

#AIP-DS# Detailed description of PBN (RNAV and RNP) routes, including:

- 1) route designator, designation of the required communication performance (RCP) specification(s), navigation specification(s) and/or required surveillance performance (RSP) specification(s) applicable to a specified segment(s), names, coded designators or name-codes and the geographical coordinates in degrees, minutes and seconds of all significant points defining the route including “compulsory” or “on-request” reporting points;
- 2) in respect of waypoints defining an area navigation route, additionally as applicable:
 - a) station identification of the reference VOR/DME;
 - b) bearing to the nearest degree and the distance to the nearest tenth of a kilometre or tenth of a nautical mile from the reference VOR/DME, if the waypoint is not collocated with it; and
 - c) elevation of the transmitting antenna of DME to the nearest 30 m (100 ft);
- 3) magnetic bearing to the nearest degree, geodesic distance to the nearest tenth of a kilometre or tenth of a nautical mile between defined end-points and distance between each successive designated significant point;
- 4) upper and lower limits and airspace classification;
- 5) direction of cruising levels;
- 6) the navigation accuracy requirement for each PBN (RNAV or RNP) route segment; and
- 7) remarks, including an indication of the controlling unit, its operating channel and, if applicable, its logon address, SATVOICE number, and any navigation, RCP and RSP specification(s) limitations.

Note.— In relation to Annex 11, Appendix 1, and for flight planning purposes, defined navigation specification is not considered to be an integral part of the route designator.

ENR 3.4 Helicopter routes

#AIP-DS# Detailed description of helicopter routes, including:

- 1) route designator, designation of the required communication performance (RCP) specification(s), navigation specification(s) and/or required surveillance performance (RSP) specification(s) applicable to a specified segment(s), names, coded designators or name-codes and the geographical coordinates in degrees, minutes and seconds of all significant points defining the route including “compulsory” or “on-request” reporting points;
- 2) tracks or VOR radials to the nearest degree, geodesic distance to the nearest tenth of a kilometre or tenth of a nautical mile between each successive designated significant point and, in the case of VOR radials, changeover points;
- 3) upper and lower limits and airspace classification;
- 4) minimum flight altitudes to the nearest higher 50 m or 100 ft;
- 5) the navigation accuracy requirement for each PBN (RNAV or RNP) route segment; and

- 6) remarks, including an indication of the controlling unit, its operating channel and, if applicable, its logon address, SATVOICE number, and any navigation, RCP and RSP specification(s) limitations.

Note.— In relation to Annex 11, Appendix 1, and for flight planning purposes, defined navigation specification is not considered to be an integral part of the route designator.

ENR 3.5 Other routes

#AIP-DS# The requirement is to describe other specifically designated routes which are compulsory within specified area(s).

Note.— Arrival, transit and departure routes which are specified in connection with procedures for traffic to and from aerodromes/heliports need not be described since they are described in the relevant section of Part 3 — Aerodromes.

ENR 3.6 En-route holding

#AIP-DS# The requirement is for a detailed description of en-route holding procedures, containing:

- 1) holding identification (if any) and holding fix (navigation aid) or waypoint with geographical coordinates in degrees, minutes and seconds;
- 2) inbound track;
- 3) direction of the procedure turn;
- 4) maximum indicated airspeed;
- 5) minimum and maximum holding level;
- 6) time/distance outbound; and
- 7) indication of the controlling unit and its operating frequency.

Note.— Obstacle clearance criteria related to holding procedures are contained in Procedures for Air Navigation Services — Aircraft Operations (PANS-OPS, Doc 8168), Volumes I and II.

ENR 4. RADIO NAVIGATION AIDS/SYSTEMS

ENR 4.1 Radio navigation aids — en-route

#AIP-DS# A list of stations providing radio navigation services established for en-route purposes and arranged alphabetically by name of the station, including:

- 1) name of the station and magnetic variation to the nearest degree and for VOR, station declination to the nearest degree used for technical line-up of the aid;
- 2) identification;
- 3) frequency/channel for each element;
- 4) hours of operation;
- 5) geographical coordinates in degrees, minutes and seconds of the position of the transmitting antenna;
- 6) elevation of the transmitting antenna of DME to the nearest 30 m (100 ft); and
- 7) remarks.

If the operating authority of the facility is other than the designated governmental agency, the name of the operating authority ~~must~~ shall be indicated in the remarks column. Facility coverage ~~must~~ shall be indicated in the remarks column.

ENR 4.2 Special navigation systems

#AIP-DS# Description of stations associated with special navigation systems (DECCA, LORAN, etc.), including:

- 1) name of station or chain;
- 2) type of service available (master signal, slave signal, colour);
- 3) frequency (channel number, basic pulse rate, recurrence rate, as applicable);
- 4) hours of operation;
- 5) geographical coordinates in degrees, minutes and seconds of the position of the transmitting station; and
- 6) remarks.

If the operating authority of the facility is other than the designated governmental agency, the name of the operating authority ~~must~~ shall be indicated in the remarks column. Facility coverage ~~must~~ shall be indicated in the remarks column.

ENR 4.3 Global navigation satellite system (GNSS)

A list and description of elements of the global navigation satellite system (GNSS) providing the navigation service established for en-route purposes and arranged alphabetically by name of the element, including:

- 1) the name of the GNSS element, e.g. (GPS, GLONASS, EGNOS, MSAS, WAAS, etc.);
- 2) frequency(ies), as appropriate;

- 3) geographical coordinates in degrees, minutes and seconds of the nominal service area and coverage area; and
- 4) remarks.

If the operating authority of the facility is other than the designated governmental agency, the name of the operating authority ~~must~~ **shall** be indicated in the remarks column.

ENR 4.4 Name-code designators for significant points

#AIP-DS# An alphabetically arranged list of name-code designators (five-letter pronounceable “name-code”) established for significant points at positions not marked by the site of radio navigation aids, including:

- 1) name-code designator;
- 2) geographical coordinates in degrees, minutes and seconds of the position;
- 3) reference to ATS or other routes where the point is located; and
- 4) remarks, including supplementary definition of positions where required.

ENR 4.5 Aeronautical ground lights — en-route

A list of aeronautical ground lights and other light beacons designating geographical positions which are selected by the State as being significant, including:

- 1) name of the city or town or other identification of the beacon;
- 2) type of beacon and intensity of the light in thousands of candelas;
- 3) characteristics of the signal;
- 4) operational hours; and
- 5) remarks.

ENR 5. NAVIGATION WARNINGS

ENR 5.1 Prohibited, restricted and danger areas

#AIP-DS# Description, supplemented by graphic portrayal where appropriate, of prohibited, restricted and danger areas together with information regarding their establishment and activation, including:

- 1) identification, name and geographical coordinates of the lateral limits in degrees, minutes and seconds if inside and in degrees and minutes if outside control area/control zone boundaries;
- 2) upper and lower limits; and
- 3) remarks, including time of activity.

Type of restriction or nature of hazard and risk of interception in the event of penetration ~~must~~ **shall** be indicated in the remarks column.

ENR 5.2 Military exercise and training areas and air defence identification zone (ADIZ)

#AIP-DS# Description, supplemented by graphic portrayal where appropriate, of established military training areas and military exercises taking place at regular intervals, and established air defence identification zone (ADIZ), including:

- 1) geographical coordinates of the lateral limits in degrees, minutes and seconds if inside and in degrees and minutes if outside control area/control zone boundaries;
- 2) upper and lower limits and system and means of activation announcements together with information pertinent to civil flights and applicable ADIZ procedures; and
- 3) remarks, including time of activity and risk of interception in the event of penetration of ADIZ.

ENR 5.3 Other activities of a dangerous nature and other potential hazards

ENR 5.3.1 Other activities of a dangerous nature

#AIP-DS# Description, supplemented by charts where appropriate, of activities that constitute a specific or obvious danger to aircraft operation and could affect flights including:

- 1) geographical coordinates in degrees and minutes of centre of area and range of influence;
- 2) vertical limits;
- 3) advisory measures;
- 4) authority responsible for the provision of information; and
- 5) remarks, including time of activity.

ENR 5.3.2 Other potential hazards

#AIP-DS# Description, supplemented by charts where appropriate, of other potential hazards that could affect flights (e.g. active volcanoes, nuclear power stations, etc.) including:

- 1) geographical coordinates in degrees and minutes of location of potential hazard;
- 2) vertical limits;
- 3) advisory measures;
- 4) authority responsible for the provision of information; and
- 5) remarks.

ENR 5.4 Air navigation obstacles

#AIP-DS# The list of obstacles affecting air navigation in Area 1 (the entire State territory), including:

- 1) obstacle identification or designation;
- 2) type of obstacle;
- 3) obstacle position, represented by geographical coordinates in degrees, minutes and seconds;
- 4) obstacle elevation and height to the nearest metre or foot;
- 5) type and colour of obstacle lighting (if any); and
- 6) if appropriate, an indication that the list of obstacles is available ~~in electronic form~~ as digital data set, and a reference to GEN 3.1.6.

Note 1.— An obstacle whose height above the ground is 100 m and higher is considered an obstacle for Area 1.

Note 2.— Specifications ~~governing~~ concerning the determination and reporting (accuracy of field work and data integrity) of positions (latitude and longitude) and elevations/heights for obstacles in Area 1 are given in ~~Annex 11, Appendix 5, Tables 1 and 2, respectively~~ Appendix 1.

ENR 5.5 Aerial sporting and recreational activities

#AIP-DS# Brief description, supplemented by graphic portrayal where appropriate, of intensive aerial sporting and recreational activities together with conditions under which they are carried out, including:

- 1) designation and geographical coordinates of the lateral limits in degrees, minutes and seconds if inside and in degrees and minutes if outside control area/control zone boundaries;
- 2) vertical limits;
- 3) operator/user telephone number; and
- 4) remarks, including time of activity.

Note.— This paragraph may be subdivided into different sections for each different category of activity, giving the indicated details in each case.

...

PART 3 — AERODROMES (AD)

If an AIP is produced and made available in more than one volume with each having a separate amendment and supplement service, a separate preface, record of AIP Amendments, record of AIP Supplements, checklist of AIP pages and list of current hand amendments ~~must~~ **shall** be included in each volume. In the case of an AIP being published as one volume, the annotation “not applicable” ~~must~~ **shall** be entered against each of the above subsections.

...

**** AD 2.1 Aerodrome location indicator and name

The requirement is for the ICAO location indicator allocated to the aerodrome and the name of aerodrome. An ICAO location indicator ~~must~~ **shall** be an integral part of the referencing system applicable to all subsections in section AD 2.

**** AD 2.2 Aerodrome geographical and administrative data

The requirement is for aerodrome geographical and administrative data including:

- 1) aerodrome reference point (geographical coordinates in degrees, minutes and seconds) and its site;
- 2) direction and distance of aerodrome reference point from centre of the city or town which the aerodrome serves;
- 3) aerodrome elevation to the nearest metre or foot, ~~and~~ reference temperature **and mean low temperature**;
- 4) where appropriate, geoid undulation at the aerodrome elevation position to the nearest metre or foot;

- 5) magnetic variation to the nearest degree, date of information and annual change;
 - 6) name of aerodrome operator, address, telephone and telefax numbers, e-mail address, AFS address and, if available, website address;
 - 7) types of traffic permitted to use the aerodrome (IFR/VFR); and
 - 8) remarks.
- ...

****** AD 2.8 Aprons, taxiways and check locations/positions data**

Details related to the physical characteristics of aprons, taxiways and locations/positions of designated checkpoints, including:

- 1) designation, surface and strength of aprons;
- 2) designation, width, surface and strength of taxiways;
- 3) location and elevation to the nearest metre or foot of altimeter checkpoints;
- 4) location of VOR checkpoints;
- 5) position of INS checkpoints in degrees, minutes, seconds and hundredths of seconds; and
- 6) remarks.

If check locations/positions are presented on an aerodrome chart, a note to that effect ~~must~~ **shall** be provided under this subsection.

****** AD 2.9 Surface movement guidance and control system and markings**

Brief description of the surface movement guidance and control system and runway and taxiway markings, including:

- 1) use of aircraft stand identification signs, taxiway guide lines and visual docking/parking guidance system at aircraft stands;
- 2) runway and taxiway markings and lights;
- 3) stop bars **and runway guard lights** (if any); ~~and~~
- 4) **other runway protection measures; and**
- 45) remarks.

****** AD 2.10 Aerodrome obstacles**

Detailed description of obstacles, including:

- 1) obstacles in Area 2:
 - a) obstacle identification or designation;
 - b) type of obstacle;
 - c) obstacle position, represented by geographical coordinates in degrees, minutes, seconds and tenths of seconds;
 - d) obstacle elevation and height to the nearest metre or foot;
 - e) obstacle marking, and type and colour of obstacle lighting (if any);
 - f) if appropriate, an indication that the list of obstacles is available ~~in electronic form~~ as digital data set, and a reference to GEN 3.1.6; and
 - g) NIL indication, if appropriate.

Note 1.— ~~Chapter 10, 10.1.1~~ Annex 15, Appendix 1, provides a description of Area 2 while Annex 15, Appendix 8-1, Figure A81-2, contains graphical illustrations of obstacle data collection surfaces and criteria used to identify obstacles in Area 2.

Note 2.— Specifications ~~governing~~ concerning the determination and reporting (accuracy of field work and data integrity) of positions (latitude and longitude) and elevations for obstacles in Area 2 are given in Annex 11, Appendix 5, Tables 1 and 2, and in Annex 14, Volume I, Appendix 5, Tables A5-1 and A5-2, respectively Appendix 1.

- 2) the absence of an Area 2 data set for the aerodrome is to be clearly stated and obstacle data are to be provided for:
 - a) obstacles that penetrate the obstacle limitation surfaces;
 - b) obstacles that penetrate the take-off flight path area obstacle identification surface; and
 - c) other obstacles assessed as being hazardous to air navigation.
- 3) indication that information on obstacles in Area 3 is not provided, or if provided:
 - a) obstacle identification or designation;
 - b) type of obstacle;
 - c) obstacle position, represented by geographical coordinates in degrees, minutes, seconds and tenths of seconds;
 - d) obstacle elevation and height to the nearest tenth of a metre or tenth of a foot;
 - e) obstacle marking, and type and colour of obstacle lighting (if any);

- f) if appropriate, an indication that the list of obstacles is available in electronic form as digital data set, and a reference to GEN 3.1.6; and
- g) NIL indication, if appropriate.

Note 1.— ~~Chapter 10, 10.1.1~~ Annex 15, Appendix 1, provides a description of Area 3 while ~~Appendix 8, Figure A8-3~~ Annex 15, Appendix 8-1, Figure A81-3, contains graphical illustrations of obstacle data collection surfaces and criteria used to identify obstacles in Area 3.

Note 2.— Specifications ~~governing~~ concerning the determination and reporting (accuracy of field work and data integrity) of positions (latitude and longitude) and elevations for obstacles in Area 3 are given in ~~Annex 14, Volume I, Appendix 5, Tables A5-1 and A5-2, respectively~~ Appendix 1.

...

**** AD 2.13 Declared distances

Detailed description of declared distances to the nearest metre or foot for each direction of each runway, including:

- 1) runway designator;
- 2) take-off run available;
- 3) take-off distance available, and if applicable, alternative reduced declared distances;
- 4) accelerate-stop distance available;
- 5) landing distance available; and
- 6) remarks, including runway entry or start point where alternative reduced declared distances have been declared.

If a runway direction cannot be used for take-off or landing, or both, because it is operationally forbidden, then this ~~must~~ shall be declared and the words “not usable” or the abbreviation “NU” entered (Annex 14, Volume I, Attachment A, Section 3).

...

**** AD 2.19 Radio navigation and landing aids

~~#AIP-DS#~~ Detailed description of radio navigation and landing aids associated with the instrument approach and the terminal area procedures at the aerodrome, including:

- 1) type of aids, magnetic variation to the nearest degree, as appropriate, and type of supported operation for ILS/MLS, basic GNSS, SBAS, and GBAS and for VOR/ILS/MLS also station declination to the nearest degree used for technical line-up of the aid;

- 2) identification, if required;
- 3) frequency(ies), channel number(s), service provider, and reference path identifier(s) (RPI), as appropriate;
- 4) hours of operation, as appropriate;
- 5) geographical coordinates in degrees, minutes, seconds and tenths of seconds of the position of the transmitting antenna, as appropriate;
- 6) elevation of the transmitting antenna of DME to the nearest 30 m (100 ft) and of DME/P to the nearest 3 m (10 ft); elevation of GBAS reference point to the nearest metre or foot, and the ellipsoid height of the point to the nearest metre or foot. For SBAS, the ellipsoid height of the landing threshold point (LTP) or the fictitious threshold point (FTP) to the nearest metre or foot;
- 7) service volume radius from the GBAS reference point to the nearest kilometre or nautical mile; and
- 8) remarks.

When the same aid is used for both en-route and aerodrome purposes, a description ~~must~~ shall also be given in section ENR 4. If the ground-based augmentation system (GBAS) serves more than one aerodrome, description of the aid ~~must~~ shall be provided under each aerodrome. If the operating authority of the facility is other than the designated governmental agency, the name of the operating authority ~~must~~ shall be indicated in the remarks column. Facility coverage ~~must~~ shall be indicated in the remarks column.

...

**** AD 2.24 Charts related to an aerodrome

The requirement is for charts related to an aerodrome to be included in the following order:

- 1) Aerodrome/Heliport Chart — ICAO;
- 2) Aircraft Parking/Docking Chart — ICAO;
- 3) Aerodrome Ground Movement Chart — ICAO;
- 4) Aerodrome Obstacle Chart — ICAO Type A (for each runway);
- 5) Aerodrome Terrain and Obstacle Chart — ICAO (Electronic);
- 6) Precision Approach Terrain Chart — ICAO (precision approach Cat II and III runways);
- 7) Area Chart — ICAO (departure and transit routes);
- 8) Standard Departure Chart — Instrument — ICAO;
- 9) Area Chart — ICAO (arrival and transit routes);
- 10) Standard Arrival Chart — Instrument — ICAO;
- 11) ATC Surveillance Minimum Altitude Chart — ICAO;
- 12) Instrument Approach Chart — ICAO (for each runway and procedure type);

- 13) Visual Approach Chart — ICAO; and
- 14) bird concentrations in the vicinity of the aerodrome.

If some of the charts are not produced, a statement to this effect ~~must~~ shall be given in section GEN 3.2, Aeronautical charts.

Note.— A page pocket may be used in the AIP to include the Aerodrome Terrain and Obstacle Chart — ICAO (Electronic) on appropriate electronic media.

AD 3. HELIPORTS

When a helicopter landing area is provided at the aerodrome, associated data ~~must~~ shall be listed only under **** AD 2.16.

Note.— ** is to be replaced by the relevant ICAO location indicator.**

**** AD 3.1 Heliport location indicator and name

The requirement is for the ICAO location indicator assigned to the heliport and the name of heliport. An ICAO location indicator ~~must~~ shall be an integral part of the referencing system applicable to all subsections in section AD 3.

**** AD 3.2 Heliport geographical and administrative data

The requirement is for heliport geographical and administrative data, including:

- 1) heliport reference point (geographical coordinates in degrees, minutes and seconds) and its site;
- 2) direction and distance of heliport reference point from centre of the city or town which the heliport serves;
- 3) heliport elevation to the nearest metre or foot, ~~and~~ reference temperature and mean low temperature;
- 4) where appropriate, geoid undulation at the heliport elevation position to the nearest metre or foot;
- 5) magnetic variation to the nearest degree, date of information and annual change;
- 6) name of heliport operator, address, telephone and telefax numbers, e-mail address, AFS address and, if available, website address;
- 7) types of traffic permitted to use the heliport (IFR/VFR); and
- 8) remarks.

...

****** AD 3.8 Aprons, taxiways and check locations/positions data**

Details related to the physical characteristics of aprons, taxiways and locations/positions of designated checkpoints, including:

- 1) designation, surface and strength of aprons, helicopter stands;
- 2) designation, width, and surface type of helicopter ground taxiways;
- 3) width and designation of helicopter air taxiway and air transit route;
- 4) location and elevation to the nearest metre or foot of altimeter checkpoints;
- 5) location of VOR checkpoints;
- 6) position of INS checkpoints in degrees, minutes, seconds and hundredths of seconds; and
- 7) remarks.

If check locations/positions are presented on a heliport chart, a note to that effect ~~must~~ **shall** be provided under this subsection.

...

****** AD 3.10 Heliport obstacles**

#OBS-DS# Detailed description of obstacles, including:

- 1) obstacle identification or designation;
- 2) type of obstacle;
- 3) obstacle position, represented by geographical coordinates in degrees, minutes, seconds and tenths of seconds;
- 4) obstacle elevation and height to the nearest metre or foot;
- 5) obstacle marking, and type and colour of obstacle lighting (if any);
- 6) if appropriate, an indication that the list of obstacles is available ~~in electronic form~~ **as digital data set**, and a reference to GEN 3.1.6; and
- 7) NIL indication, if appropriate.

...

****** AD 3.18 Radio navigation and landing aids**

Detailed description of radio navigation and landing aids associated with the instrument approach and the terminal area procedures at the heliport, including:

- 1) type of aids, magnetic variation (for VOR, station declination used for technical line-up of the aid) to the nearest degree, and type of operation for ILS, MLS, basic GNSS, SBAS and GBAS;
- 2) identification, if required;
- 3) frequency(ies), as appropriate;
- 4) hours of operation, as appropriate;
- 5) geographical coordinates in degrees, minutes, seconds and tenths of seconds of the position of the transmitting antenna, as appropriate;
- 6) elevation of the transmitting antenna of DME to the nearest 30 m (100 ft) and of DME/P to the nearest 3 m (10 ft); and 7) remarks.

When the same aid is used for both en-route and heliport purposes, a description ~~must~~ shall also be given in section ENR 4. If the ground-based augmentation system (GBAS) serves more than one heliport, description of the aid ~~must~~ shall be provided under each heliport. If the operating authority of the facility is other than the designated governmental agency, the name of the operating authority ~~must~~ shall be indicated in the remarks column. Facility coverage ~~must~~ shall be indicated in the remarks column.

...

**** AD 3.23 Charts related to a heliport

The requirement is for charts related to a heliport to be included in the following order:

- 1) Aerodrome/Heliport Chart — ICAO;
- 2) Area Chart — ICAO (departure and transit routes);
- 3) Standard Departure Chart — Instrument — ICAO;
- 4) Area Chart — ICAO (arrival and transit routes);
- 5) Standard Arrival Chart — Instrument — ICAO;
- 6) ATC Surveillance Minimum Altitude Chart — ICAO;
- 7) Instrument Approach Chart — ICAO (for each procedure type);
- 8) Visual Approach Chart — ICAO; and
- 9) bird concentrations in the vicinity of heliport.

If some of the charts are not produced, a statement to this effect ~~must~~ shall be given in section GEN 3.2, Aeronautical charts.

Origin	Rationale – Changes to the contents of the AIP
AIS-AIMSG	Changes have been introduced to the contents of an AIP to account for: a) the introduction of the Aeronautical Data Catalogue; b) the introduction of digital data sets; c) the fact that certain information elements prefixed with #AIP-DS# and #OBS-DS# may be left out when available through AIP or Obstacle Data Set; and d) all the specifications in the PANS-AIM should be expressed through “should” or “shall” statements. All the corrections have been done accordingly. In the context of the AIP, the provision that some parts may be left empty if the data is available in a data set, encourages the transition from product-centric to data-centric environments by promoting the change from long textual information to structured and digital data, with no need to duplicate the information.

INITIAL PROPOSAL 17 - NOTAM FORMAT

APPENDIX 3. NOTAM FORMAT*(see Chapter 5, 5.2.5)*

...

INSTRUCTIONS FOR THE COMPLETION OF THE NOTAM FORMAT

...

3. Qualifiers (Item Q)

...

2) NOTAM CODE

All NOTAM Code groups contain a total of five letters and the first letter is always the letter Q. The second and third letters identify the subject, and the fourth and fifth letters denote the status or condition of the subject reported upon. The two-letter codes for subjects and conditions are those contained in the PANS-ABC (Doc 8400). For combinations of second and third, and fourth and fifth letters, refer to the NOTAM Selection Criteria contained in Doc 8126 or insert one of the following combinations, as appropriate:

- a) If the subject is not listed in the NOTAM Code (Doc 8400) or in the NOTAM Selection Criteria (Doc 8126), insert “XX” as the second and third letters (e.g. QXXAK); If subject is “XX”, use “XX” also for condition (e.g. QXXXX).

...

5) SCOPE

A	=	Aerodrome
E	=	En-route
W	=	Nav Warning
K	=	NOTAM is a checklist

Note.— Depending on the NOTAM subject and content, the qualifier field SCOPE may contain combined qualifiers. Guidance concerning the combination of SCOPE qualifiers with subject and conditions in accordance with the NOTAM Selection Criteria is contained in Doc 8126. If the subject is qualified AE, the aerodrome location indicator ~~must~~ shall be reported in Item A).

...

Origin	Rationale – NOTAM FORMAT
AIS-AIMSG	Clarity is provided in the use of the “XX” as subject and condition. Additionally, all the specifications in the PANS-AIM should be expressed through “should” or “shall” statements. All the corrections have been done accordingly.

INITIAL PROPOSAL 18 - SNOWTAM FORMAT

APPENDIX 4. SNOWTAM FORMAT

(see Chapter 5, 5.2.5)

INSTRUCTIONS FOR THE COMPLETION OF THE SNOWTAM FORMAT

1. *General*
 - a) When reporting on more than one runway, repeat Items B to P inclusive.
 - b) Items together with their indicator ~~must~~ **shall** be dropped completely, where no information is to be included.
 - c) Metric units ~~must~~ **shall** be used and the unit of measurement not reported.
 - d) The maximum validity of SNOWTAM is 24 hours. New SNOWTAM ~~must~~ **shall** be issued whenever there is a significant change in conditions. The following changes relating to runway conditions are considered as significant:
 - ...
 - g) For readability purposes for the SNOWTAM message, include a line feed after the SNOWTAM serial number, after Item A, after the last item referring to the runway (e.g. Item P) and after Item S.
 - ...
2. *Item A* — Aerodrome location indicator (four-letter location indicator).
3. *Item B* — Eight-figure date/time group — giving time of observation as month, day, hour and minute in UTC; this item ~~must~~ **shall** always be completed.

...

Origin	Rationale – SNOWTAM FORMAT
AIS-AIMSG	All the specifications in the PANS-AIM should be expressed through “should” or “shall” statements. All the corrections have been done accordingly.

INITIAL PROPOSAL 19 - ASHTAM FORMAT**INSTRUCTIONS FOR THE COMPLETION OF THE ASHTAM FORMAT**

...

1.4 The maximum period of validity of ASHTAM is 24 hours. New ASHTAM ~~must~~ **shall** be issued whenever there is a change in the level of alert.

...

Origin	Rationale – ASHTAM FORMAT
AIS-AIMSG	All the specifications in the PANS-AIM should be expressed through “should” or “shall” statements. All the corrections have been done accordingly.

ATTACHMENT H to State letter AN 2/2.1.1-17/22

PROPOSED AMENDMENT TO PANS-AIM
(Applicable on 5 November 2020)

NOTES ON THE PRESENTATION OF THE PROPOSED AMENDMENT

The text of the amendment is arranged to show deleted text with a line through it and new text highlighted with grey shading, as shown below:

~~Text to be deleted is shown with a line through it.~~

Text to be deleted

New text to be inserted is highlighted with grey shading.

New text to be inserted

~~Text to be deleted is shown with a line through it~~ followed by the
replacement text which is highlighted with grey shading.

New text to replace
existing text

**TEXT OF PROPOSED AMENDMENT TO THE
PROCEDURES FOR AIR NAVIGATION SERVICES —
AERONAUTICAL INFORMATION MANAGEMENT**

(PANS-AIM)

(Applicable on 5 November 2020)

INITIAL PROPOSAL 1 related to Changes to the SNOWTAM format

CHAPTER 1 – DEFINITIONS

...

SNOWTAM. A special series NOTAM given in a standard format providing a surface condition report notifying the presence or removal cessation of hazardous conditions due to snow, ice, slush, frost, or standing water or water associated with snow, slush and, ice, or frost on the movement area, by means of a specific format.

...

CHAPTER 5 –AERONAUTICAL INFORMATION PRODUCTS AND SERVICES

...

5.2.2 Aeronautical Information Circulars

...

5.2.2.2 The snow plan issued under AD 1.2.2 of the AIP shall be supplemented by seasonal information, to be issued well in advance of the beginning of each winter — not less than one month before the normal onset of winter conditions — and shall contain information such as that listed below:

- a) a list of aerodromes/heliports where snow, slush, ice or frost clearance is expected to be performed during the coming winter:

...

5.2.5 NOTAM

5.2.5.1 General specifications

...

5.2.5.1.2 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.

Note 1.— The ICAO NOTAM Code together with significations/uniform abbreviated phraseology, and ICAO Abbreviations are those contained in the Procedures for Air Navigation Services — ICAO Abbreviations and Codes (PANS-ABC, Doc 8400).

Note 2.— Additional procedures covering the reporting of runway surface conditions is contained in the Procedures for Air Navigation Services — Aerodromes (PANS-Aerodromes, Doc 9981).

...

5.2.5.1.4 Information concerning snow, slush, ice ~~and standing water on aerodrome/heliport pavements, when reported~~, frost, standing water, or water associated with snow, slush, ice or frost 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.

Note.— The origin and order of the information is a result of assessment processes and procedures prescribed in the PANS-Aerodromes (Doc 9981).

APPENDIX 4. SNOWTAM FORMAT

(See Chapter 5, 5.2.5.1.5.)

(COM heading)	(PRIORITY INDICATOR)	(ADDRESSES)										<<<≡	
	(DATE AND TIME OF FILING)					(ORIGINATOR'S INDICATOR)					<<<≡		
(Abbreviated heading)	(SWAA* SERIAL NUMBER)					(LOCATION INDICATOR)		DATE/TIME OF ASSESMENT					(OPTIONAL GROUP)
	S	W	*	*									<<<≡(
SNOWTAM	(Serial number)												
Aeroplane performance calculation section													
(AERODROME LOCATION INDICATOR)								M	A)	<<<≡			
(DATE/TIME OF ASSESSMENT (<i>Time of completion of assessment in UTC</i>))								M	B)	→			
(LOWER RUNWAY DESIGNATORS DESIGNATION NUMBER)								M	C)	→			
(RUNWAY CONDITION CODE (RWYCC) ON EACH THIRD-OF-RUNWAY THIRD) (From Runway Condition Assessment Matrix (RCAM) 0, 1, 2, 3, 4, 5 or 6)								M	D)	/ / →			
(PER CENT COVERAGE CONTAMINANT FOR EACH THIRD-OF-RUNWAY THIRD)								C	E)	/ / →			
(DEPTH (mm) OF LOOSE CONTAMINANT FOR EACH THIRD-OF-RUNWAY THIRD)								C	F)	/ / →			
(CONDITION DESCRIPTION OVER TOTAL RUNWAY LENGTH (Observed on each third-of-runway third, starting from threshold having the lower runway designation number)								M	G)	/ /			
COMPACTED SNOW DRY DRY SNOW DRY SNOW ON TOP OF COMPACTED SNOW DRY SNOW ON TOP OF ICE FROST ICE SLUSH STANDING WATER WATER ON TOP OF COMPACTED SNOW WET WET ICE WET SNOW WET SNOW ON TOP OF COMPACTED SNOW WET SNOW ON TOP OF ICE										→			
(WIDTH OF RUNWAY TO WHICH THE RWYCCs RUNWAY CONDITION CODES APPLY, IF LESS THAN PUBLISHED WIDTH)								O	H)	<<<≡			
Situational awareness section													
(REDUCED RUNWAY LENGTH, IF LESS THAN PUBLISHED LENGTH (m))								O	I)	→			
(DRIFTING SNOW ON THE RUNWAY)								O	J)	→			
(LOOSE SAND ON THE RUNWAY)								O	K)	→			
(CHEMICAL TREATMENT ON THE RUNWAY)								O	L)	→			
(SNOWBANKS ON THE RUNWAY (If present, distance from runway centreline (m) followed by "L", "R" or "LR" as applicable))								O	M)	→			
(SNOWBANKS ADJACENT TO THE RUNWAY (SNOWBANKS ON A TAXIWAY (If present, distance from the centreline (m) followed by "L", "R" or "LR" as applicable))								O	N)	→			
(SNOWBANKS ON THE TAXIWAY (If present, distance from the edge of runway (m) followed by "L", "R" or "LR" as applicable)) (SNOWBANKS ADJACENT TO THE RUNWAY)								O	O)	→			
(TAXIWAY CONDITIONS)								O	P)	→			
(APRON CONDITIONS)								O	R)	→			
(MEASURED FRICTION COEFFICIENT)								O	S)	→			
(PLAIN-LANGUAGE REMARKS)								O	T)	) <<<≡			
NOTES:													

1. *Enter ICAO nationality letters as given in ICAO Doc 7910, Part 2 or otherwise applicable aerodrome identifier. 2. Information on other runways, repeat from B to H. 3. Information in the situational awareness section repeated for each runway, taxiway and apron. Repeat as applicable when reported. 4. Words in brackets () not to be transmitted. 5. For letters A) to T) refer to the <i>Instructions for the completion of the SNOWTAM format, paragraph 1, item b).</i>	

SIGNATURE OF ORIGINATOR (*not for transmission*)

INSTRUCTIONS FOR THE COMPLETION OF THE SNOWTAM FORMAT

Note.— Origin of data, assessment process and the procedures linked to the surface conditions reporting system are prescribed in the Procedures for Air Navigation Services — Aerodromes (PANS-Aerodromes, Doc 9981).

1. General

- a) When reporting on more than one runway, repeat Items B to H (aeroplane performance calculation section).
- b) The letters used to indicate items are only used for reference purpose and should not be included in the messages. The letters, M (mandatory), C (conditional) and O (optional) mark the usage and information and shall be included as explained below.
- c) Metric units shall be used and the unit of measurement not reported.
- d) The maximum validity of SNOWTAM is 8 hours. New SNOWTAM shall be issued whenever a new runway condition report is received.
- e) A SNOWTAM cancels the previous SNOWTAM.
- f) The abbreviated heading “TTAAiiii CCCC MMYYGggg (BBB)” is included to facilitate the automatic processing of SNOWTAM messages in computer data banks. The explanation of these symbols is:

TT = data designator for SNOWTAM = SW;

AA = geographical designator for States, e.g. LF = FRANCE, EG = United Kingdom (see *Location Indicators* (Doc 7910), Part 2, Index to Nationality Letters for Location Indicators);

iiii = SNOWTAM serial number in a four-digit group;

CCCC = four-letter location indicator of the aerodrome to which the SNOWTAM refers (see *Location Indicators* (Doc 7910));

MMYYGGgg = date/time of observation/measurement, whereby:

MM = month, e.g. January = 01, December = 12

YY = day of the month

GGgg = time in hours (GG) and minutes (gg) UTC;

(BBB) = optional group for:

Correction, in the case of an error, to a SNOWTAM message previously disseminated with the same serial number = COR.

Note 1.— Brackets in (BBB) are used to indicate that this group is optional.

Note 2.— When reporting on more than one runway and individual dates/times of observation/measurement/assessment are indicated by repeated Item B, the latest date/time of observation/measuring/assessment is inserted in the abbreviated heading (MMYYGGgg).

Example: Abbreviated heading of SNOWTAM No. 149 from Zurich, measurement/observation of 7 November at 0620 UTC:

SWLS0149 LSZH 11070620

Note.— The information groups are separated by a space, as illustrated above.

g) The text “SNOWTAM” in the SNOWTAM Format and the SNOWTAM serial number in a four-digit group shall be separated by a space, for example: SNOWTAM 0124.

g) h) For readability purposes for the SNOWTAM message, include a line feed after the SNOWTAM serial number, after Item A, and after the aeroplane performance calculation section.

h) i) When reporting on more than one runway, repeat the information in the aeroplane performance calculation section from the date and time of assessment for each runway before the information in the situational awareness section.

i) j) Mandatory information is:

- 1) AERODROME LOCATION INDICATOR;
- 2) DATE AND TIME OF ASSESSMENT;
- 3) LOWER RUNWAY DESIGNATOR NUMBER;
- 4) RUNWAY CONDITION CODE FOR EACH ~~THIRD OF~~ RUNWAY **THIRD**; and
- 5) CONDITION DESCRIPTION FOR EACH ~~THIRD OF~~ RUNWAY **THIRD** (when runway condition code (RWYCC) is reported 1- 5)

2. Aeroplane performance calculation section

Item A — Aerodrome location indicator (four-letter location indicator).

Item B — Date and time of assessment (eight-figure date/time group giving time of observation as month, day, hour and minute in UTC).

Item C — Lower runway designator number (nn[L] or nn[C] or nn[R]).

Note.— Only one runway designator is inserted for each runway and always the lowest-lower number.

Item D — Runway condition code for each ~~third of~~ runway **third**. Only one digit (0, 1, 2, 3, 4, 5 or 6) is inserted for each ~~third of~~ runway **third**, separated by an oblique stroke (n/n/n).

Item E — Per cent coverage for each ~~third of~~ runway **third**. When provided, insert 25, 50, 75 or 100 for each ~~third of~~ runway **third**, separated by an oblique stroke ([n]nn/[n]nn/[n]nn).

Note 1.— This information is provided only when the runway condition for each ~~third of runway~~ third (Item D) has been reported as other than 6 and there is a condition description for each ~~third of runway~~ third (Item G) that has been reported other than DRY.

Note 2.— When the conditions are not reported, this will be signified by the insertion of “NR” for the appropriate ~~third of runway~~ third(s).

Item F — Depth of loose contaminant for each ~~third of runway~~ third. When provided, insert in millimetres for each ~~third of runway~~ third, separated by an oblique stroke (nn/nn/nn or nnn/nnn/nnn).

Note 1.— This information is only provided for the following contamination types:

- standing water, values to be reported 04, then assessed value. Significant changes 3 mm up to and including 15 mm;
- slush, values to be reported 03, then assessed value. Significant changes 3 mm up to and including 15 mm;
- wet snow, values to be reported 03, then assessed value. Significant changes 5 mm; and
- dry snow, values to be reported 03, then assessed value. Significant changes 20 mm.

Note 2.— When the conditions are not reported, this will be signified by the insertion of “NR” for the appropriate ~~third of runway~~ third(s).

Item G — Condition description for each ~~third of runway~~ third. Insert any of the following condition descriptions for each ~~third of runway~~ third, separated by an oblique stroke.

COMPACTED SNOW
 DRY SNOW
 DRY SNOW ON TOP OF COMPACTED SNOW
 DRY SNOW ON TOP OF ICE
 FROST
 ICE
 SLUSH
 STANDING WATER
 WATER ON TOP OF COMPACTED SNOW
 WET
 WET ICE
 WET SNOW
 WET SNOW ON TOP OF COMPACTED SNOW
 WET SNOW ON TOP OF ICE

DRY (only reported when there is no contaminant)

Note.— When the conditions are not reported, this will be signified by the insertion of “NR” for the appropriate ~~third of runway~~ third(s).

Item H — Width of runway to which the runway condition codes apply. Insert the width in metres if less than the published runway width.

3. *Situational awareness section*

Note 1.— Elements in the situational awareness section end with a full stop.

Note 2.— Elements in the situational awareness section for which no information exists, or where the conditional circumstances for publication are not fulfilled, are left out completely.

Item I — Reduced runway length. Insert the applicable runway designator and available length in meters (example: RWY nn [L] or nn [C] or nn [R] REDUCED TO [n]nnn).

Note.— This information is conditional when a NOTAM has been published with a new set of declared distances.

Item J — Drifting snow on the runway. When reported, insert “DRIFTING SNOW”.

Item K — Loose sand on the runway. When loose sand is reported on the runway, insert the ~~lowest~~ lower runway designator and with a space “LOOSE SAND” (RWY nn or RWY nn[L] or nn[C] or nn[R] LOOSE SAND).

Item L — Chemical treatment on the runway. When chemical treatment has been reported applied, insert the ~~lowest~~ lower runway designator and with a space “CHEMICALLY TREATED” (RWY nn or RWY nn[L] or nn[C] or nn[R] CHEMICALLY TREATED).

Item M — Snow banks on the runway. When ~~critical~~ snow banks are reported present on the runway, insert the lower runway designator and with a space “SNOWBANK” and with a space left “L” or right “R” or both sides “LR”, followed by the distance in metres from centreline separated by a space FM CL (RWY nn or RWY nn[L] or nn[C] or nn[R] SNOWBANK Lnn or Rnn or LRnn FM CL).

Item ~~ON~~ — Snow banks on the a taxiway. When ~~critical~~ snow banks are present on a taxiway, insert the taxiway designator and with a space “SNOWBANK” and with a space left “L” or right “R” or both sides “LR”, followed by the distance in metres from centreline separated by a space FM CL (TWY [nn]n SNOWBANK Lnn or Rnn or LRnn FM CL).

Item ~~NO~~ — Snow banks adjacent to the runway. When snow banks are reported present penetrating the height profile in the aerodrome snow plan, insert the ~~lowest~~ lower runway designator and “ADJ SNOWBANKS” (RWY nn or RWY nn[L] or nn[C] or nn[R] ADJ SNOWBANKS).

Item P — Taxiway conditions. When taxiway conditions are reported slippery or poor, insert the taxiway designator followed by a space “POOR” (TWY [n or nn] POOR or ALL TWYS POOR).

Item R — Apron conditions. When apron conditions are reported slippery or poor, insert the apron designator followed by a space “POOR” (APRON [nnnn] POOR or ALL APRONS POOR).

Item S — Measured friction coefficient. Where reported, insert the measured friction coefficient and friction measuring device.

Note.— This will only be reported for States that have an established programme of runway friction measurement using State-approved friction measuring equipment device.

Item T — Plain language remarks.

EXAMPLE OF COMPLETED SNOWTAM FORMAT

Example SNOWTAM 1

GG EADBZQZX EADNZQZX EADSZQZX
~~070645~~ 170100 EADDYNYX
 SWEA0149 EADD 02170055
 (SNOWTAM 0149
 EADD
 02170055 09L 5/5/5 100/100/100 NR/NR/NR WET/WET/WET SNOW
)

Example SNOWTAM 2

GG EADBZQZX EADNZQZX EADSZQZX
~~070645~~ 170140 EADDYNYX
 SWEA0149 SWEA0150 EADD ~~02170055~~ 02170135
 (SNOWTAM 0150
 EADD
 02170055 09L 5/5/5 100/100/100 NR/NR/NR WET/WET/WET SNOW
 EADD 02170135 09R 5/4/3 100/50/75 NR/06/06 WET/SLUSH/SLUSH
)

Example SNOWTAM 3

GG EADBZQZX EADNZQZX EADSZQZX
~~070645~~ 170229 EADDYNYX
 SWEA0149 SWEA0151 EADD ~~02170055~~ 02170225
 (SNOWTAM 0151
 EADD
 02170055 09L 5/5/5 100/100/100 NR/NR/NR WET/WET/WET SNOW
 EADD 02170135 09R 5/4/3 100/50/75 NR/06/06 WET/SLUSH/SLUSH
 EADD 02170225 09C 3/2/1 75/100/100 06/12/12 SLUSH/WET SNOW/WET SNOW

RWY 09L SNOWBANK R20 FM CL. RWY 09R ADJ SNOWBANKS. TWY B POOR. APRON NORTH POOR)

Example SNOWTAM 4

GG EADBZQZX EADNZQZX EADSZQZX

~~070645~~ 170350 EADDYNYXSWEA0149 SWEA0152 EADD ~~02170055~~ 02170345

(SNOWTAM 0152

EADD

02170345 09L 5/5/5 100/100/100 NR/NR/NR WET/WET/~~WET~~SLUSH~~EADD~~ 02170134 09R 5/4/3 100/50/75 NR/06/06 WET/SLUSH/SLUSH~~EADD~~ 02170225 09C 3/2/1 75/100/100 06/12/12 SLUSH/WET SNOW/WET SNOW 35

DRIFTING SNOW. RWY 09L LOOSE SAND. RWY 09R CHEMICALLY TREATED. RWY 09C CHEMICALLY TREATED.)

Origin	Rationale – Changes to the SNOWTAM format
Secretariat	Amendment 39-B to Annex 15 has brought modifications to the SNOWTAM provisions due to the introduction of the Global Reporting Format to report runway surface conditions in a standardized manner. The proposed amendment relocates the SNOWTAM provisions to the PANS-AIM and provides additional changes to the SNOWTAM format and the associated examples. A number of inconsistencies were in fact detected and corrections are introduced accordingly.

— — — — —

ATTACHMENT I to State letter AN 2/2.1.1-17/22

PROPOSED AMENDMENT TO ANNEX 3

NOTES ON THE PRESENTATION OF THE PROPOSED AMENDMENT

The text of the amendment is arranged to show deleted text with a line through it and new text highlighted with grey shading, as shown below:

~~Text to be deleted is shown with a line through it.~~

Text to be deleted

New text to be inserted is highlighted with grey shading.

New text to be inserted

~~Text to be deleted is shown with a line through it~~ followed
by the replacement text which is highlighted with grey
shading.

New text to replace existing text

TEXT OF PROPOSED AMENDMENT TO THE
INTERNATIONAL STANDARDS
AND RECOMMENDED PRACTICES
METEOROLOGICAL SERVICE FOR INTERNATIONAL AIR NAVIGATION
ANNEX 3
TO THE CONVENTION ON INTERNATIONAL CIVIL AVIATION

INITIAL PROPOSAL 1 related to change of references

PART I. CORE SARPs

...

CHAPTER 2. GENERAL PROVISIONS

...

2.1 Objective, determination and provision of meteorological service

...

2.1.4 Each Contracting State shall designate the authority, hereinafter referred to as the meteorological authority, to provide or to arrange for the provision of meteorological service for international air navigation on its behalf. Details of the meteorological authority so designated shall be included in the State aeronautical information publication, in accordance with Annex 15, Chapter 5 Appendix 1, GEN 1.1.

Note.— Detailed specifications concerning presentation and contents of the aeronautical information publication is provided in PANS-AIM (Doc 10066), Appendix 2.

...

CHAPTER 9. SERVICE FOR OPERATORS AND FLIGHT CREW MEMBERS

...

**9.4 Automated pre-flight information systems for briefing,
consultation, flight planning and flight documentation**

...

9.4.2 **Recommendation.**— Automated pre-flight information systems providing for a harmonized, common point of access to meteorological information and aeronautical information services information by operators, flight crew members and other aeronautical personnel concerned should be as agreed between the meteorological authority and the civil aviation authority or the agency to which the authority to provide service has been delegated in accordance with Annex 15, 2.1.1 c).

Note.— The meteorological and aeronautical information services information concerned is specified in 9.1 to 9.3 and Appendix 8 and in Annex 15, 8.1 and 8.2 PANS-AIM, 5.5, respectively.

...

APPENDIX 9. TECHNICAL SPECIFICATIONS RELATED TO INFORMATION FOR AIR TRAFFIC SERVICES, SEARCH AND RESCUE SERVICES AND AERONAUTICAL INFORMATION SERVICES

...

3. INFORMATION TO BE PROVIDED FOR AERONAUTICAL INFORMATION SERVICES UNITS

3.1 List of information

The following information shall be supplied, as necessary, to an aeronautical information services unit:

- a) information on meteorological service for international air navigation, intended for inclusion in the aeronautical information publication(s) concerned;

Note.— Details of this information are given in ~~Annex 15~~ PANS-AIM, Appendix 43, Part 1, GEN 3.5 and Part 3, AD 2.2, 2.11, 3.2 and 3.11.

- b) information necessary for the preparation of NOTAM or ASHTAM including, in particular, information on:
 - 1) the establishment, withdrawal and significant changes in operation of aeronautical meteorological services. This information is required to be provided to the aeronautical information services unit sufficiently in advance of the effective date to permit issuance of NOTAM in compliance with Annex 15, ~~5.1.1.6.3.2.2~~ and ~~5.1.1.16.3.2.3~~;

...

Origin	Rationale - Change of references
AIS-AIMSG	This is a consequential amendment to the restructuring of Annex 15 and the introduction of a new PANS-AIM. References have been updated accordingly.

ATTACHMENT J to State letter AN 2/2.1.1-17/22

PROPOSED AMENDMENT TO ANNEX 4

NOTES ON THE PRESENTATION OF THE PROPOSED AMENDMENT

The text of the amendment is arranged to show deleted text with a line through it and new text highlighted with grey shading, as shown below:

~~Text to be deleted is shown with a line through it.~~

Text to be deleted

New text to be inserted is highlighted with grey shading.

New text to be inserted

~~Text to be deleted is shown with a line through it~~ followed
by the replacement text which is highlighted with grey
shading.

New text to replace existing text

TEXT OF PROPOSED AMENDMENT TO THE
INTERNATIONAL STANDARDS
AND RECOMMENDED PRACTICES
AERONAUTICAL CHARTS

ANNEX 4
TO THE CONVENTION ON INTERNATIONAL CIVIL AVIATION

INITIAL PROPOSAL 1 related to Data Quality Requirements

TABLE OF CONTENTS

~~APPENDIX 6. Aeronautical data quality requirements APP 6-1~~

...

CHAPTER 1. DEFINITIONS, APPLICABILITY AND AVAILABILITY

1.1 Definitions

...

Data quality. A degree or level of confidence that the data provided meet the requirements of the data user in terms of accuracy, resolution, integrity (or equivalent assurance level), traceability, timeliness, completeness and format.

...

Data Resolution. A number of units or digits to which a measured or calculated value is expressed and used.

...

CHAPTER 2. GENERAL SPECIFICATIONS

...

2.17 Aeronautical data

2.17.1 Each Contracting State shall take all necessary measures to introduce a properly organized quality system containing procedures, processes and resources necessary to implement quality management at each function stage as outlined in Annex 15, 3.4-76. The execution of such quality management shall be made demonstrable for each function stage, when required. In addition, States shall ensure that established procedures exist in order that aeronautical data at any moment is traceable to its origin so to allow any data anomalies or errors, detected during the production/maintenance phases or in the operational use, to be corrected.

Note.— Specifications governing the quality system are given in Annex 15, Chapter 3.

2.17.2 States shall ensure that the order of chart resolution of aeronautical data shall be that as specified for a particular chart ~~and as presented in a tabular form in Appendix 6.~~

Note.— Specifications concerning the chart resolution for aeronautical data are contained in PANS-AIM (Doc 10066), Appendix 1.

2.17.3 Contracting States shall ensure that integrity of aeronautical data is maintained throughout the data process from ~~survey/origin~~ *origination* to *distribution* to the next intended user.

Note.— Specifications concerning the integrity classification related to aeronautical data are provided in PANS-AIM (Doc 10066), Appendix 1.

~~Based on the applicable integrity classification, the validation and verification procedures shall:~~

- ~~a) for routine data: avoid corruption throughout the processing of the data;~~
- ~~b) for essential data: assure corruption does not occur at any stage of the entire process and may include additional processes as needed to address potential risks in the overall system architecture to further assure data integrity at this level; and~~
- ~~c) for critical data: assure corruption does not occur at any stage of the entire process and include additional integrity assurance processes to fully mitigate the effects of faults identified thorough analysis of the overall system architecture as potential data integrity risks.~~

Note 1.— Guidance material in respect to the processing of aeronautical data and aeronautical information is contained in RTCA Document DO-200A and European Organization for Civil Aviation Equipment (EUROCAE) Document ED 76—Standards for Processing Aeronautical Data.

Note 2.— Error producing faults in the entire process may be mitigated by additional data quality assurance techniques as may be required. These could include application tests for critical data (for example, by flight check); the use of security, logic, semantic, comparison, and redundancy checks; digital error detection; and the qualification of human resources and process tools such as hardware and software.

~~2.17.4 Aeronautical data quality requirements related to the integrity and data classification shall be as provided in Tables 1 to 6 in Appendix 6.~~

Editorial Note.— Renumber subsequent paragraphs.

...

2.18 Common reference systems

2.18.1 Horizontal reference system

...

2.18.1.3 The order of chart resolution of geographical coordinates shall be that specified for a particular chart series ~~and in accordance with Appendix 6, Table 1.~~

Note 1.— Specifications ~~governing~~ concerning the determination and reporting (accuracy of field work and data integrity) of WGS-84-related aeronautical coordinates for geographical positions established by air traffic services are given in Annex 11, Chapter 2, ~~and Appendix 5, Table 1;~~ and for aerodrome/heliport-related positions, in Annex 14, Volumes I and II, Chapter 2 ~~and in Table A5-1 of Appendix 5 and Table A1-1 of Appendix 1, respectively.~~

Note 2.— Specifications concerning the accuracy and integrity classification of WGS-84-related aeronautical data are contained in PANS-AIM (Doc 10066), Appendix 1.

...

2.18.2 Vertical reference system

...

2.18.2.2 In addition to the elevations referenced to MSL, for the specific surveyed ground positions, geoid undulation (referenced to the WGS-84 ellipsoid) for those positions shall also be published as specified for a particular chart.

Note 1.— Specifications governing concerning the determination and reporting (accuracy of field work and data integrity) of elevation and geoid undulation at specific positions at aerodromes/heliports are given in Annex 14, Volumes I and II, Chapter 2, and in Table A5-2 of Appendix 5 and Table A1-2 of Appendix 1, respectively.

Note 2.— Specifications concerning the accuracy and integrity classification of elevation and geoid undulation at specific positions at aerodromes/heliports are contained in PANS-AIM (Doc 10066), Appendix 1.

2.18.2.3 The order of chart resolution of elevation and geoid undulation shall be that specified for a particular chart series and in accordance with Appendix 6, Table 2.

Note.— Specifications concerning the chart resolution of elevation and geoid undulation are contained in PANS-AIM (Doc 10066), Appendix 1.

...

CHAPTER 5. AERODROME TERRAIN AND OBSTACLE CHART — ICAO (ELECTRONIC)

...

5.4 Chart coverage

The extent of each chart shall be sufficient to cover Area 2 as specified in Annex 15, 10-1 Chapter 5.

...

5.5 Chart content

...

5.5.2 Terrain feature

5.5.2.1 The terrain feature, and associated attributes, to be portrayed and database-linked to the chart shall be based on the electronic terrain data sets which satisfy the requirements of Annex 15, Chapter 10-1 and Appendix 8.

Note.— Specifications concerning terrain data sets are contained in PANS-AIM (Doc 10066), Chapter 5 and Appendix 6 and 8.

5.5.2.2 The terrain feature shall be portrayed in a manner that provides an effective general impression of a terrain. This shall be a representation of terrain surface by continuous elevation values at all intersections of the defined grid, also known as the Digital Elevation Model (DEM).

Note.— In accordance with Annex 15, Chapter 105 and Appendix 8 and PANS-AIM (Doc 10066), Chapter 5 and Appendix 8, the DEM for Area 2 post spacing (grid) is specified at 1 arc second (approximately 30 m).

5.5.2.3 Recommendation.— Representation of terrain surface should be provided as a selectable layer of contour lines in addition to the DEM.

5.5.2.4 Recommendation.— An ortho-rectified image which matches the features on the DEM with features on the overlying image should be used to enhance the DEM. The image should be provided as a separate selectable layer.

5.5.2.5 The portrayed terrain feature shall be linked to the following associated attributes in the database(s):

- a) horizontal positions of grid points in geographic coordinates and elevations of the points;
- b) surface type;
- c) contour line values, if provided; and
- d) names of cities, towns and other prominent topographic features.

5.5.2.6 Recommendation.— ~~Other Additional~~ terrain attributes ~~specified in Annex 15, Appendix 8, Table A8-3, and~~ provided in the database(s) should be linked to the portrayed terrain feature.

Note.— Specifications concerning terrain attributes are contained in PANS-AIM (Doc 10066), Appendix 6, Table A6-1.

5.5.3 Obstacle features

5.5.3.1 Obstacle features, and associated attributes, portrayed or database-linked to the chart shall be based on electronic obstacle data sets which satisfy the requirements of Annex 15, Chapter 105 and Appendix 8.

Note.— Specifications concerning obstacle data sets are contained in PANS-AIM (Doc 10066), Chapter 5 and Appendix 6 and 8.

5.5.3.2 Each obstacle shall be portrayed by an appropriate symbol and obstacle identifier.

5.5.3.3 The portrayed obstacle feature shall be linked to the following associated attributes in the database(s):

- a) horizontal position in geographic coordinates and associated elevation;
- b) obstacle type; and
- c) obstacle extent, if appropriate.

5.5.3.4 Recommendation.— ~~Other Additional~~ obstacle attributes ~~specified in Annex 15, Appendix 8, Table A8-4, and~~ provided in the database(s) should be linked to the portrayed obstacle feature.

Note.— Specifications concerning obstacle attributes are contained in PANS-AIM (Doc 10066), Appendix 6, Table A6-1.

...

5.5.4 Aerodrome features

5.5.4.1 Aerodrome features, and associated attributes, portrayed and database-linked to the chart shall be based on aerodrome data which satisfy the requirements of ~~Annex 14, Volume I, Appendix 5 and Annex 15, Appendix 7~~ Annex 15, Chapter 5.

Note.— Specifications concerning aerodrome features and associated attributes are contained in PANS-AIM (Doc 10066), Chapter 5 and Appendix 1.

...

5.6 Accuracy and resolution

5.6.1 The order of accuracy of aeronautical, terrain and obstacle data shall be in accordance with its intended use as specified in ~~Annex 11, Appendix 5, and Annex 14, Volume I, Appendix 5, and Volume II, Appendix 1.~~ The order of accuracy of terrain and obstacle data shall be as specified in Annex 15, Appendix 8.

Note.— Specifications concerning the accuracy of aeronautical, terrain and obstacle data are contained in the PANS-AIM (Doc 10066), Appendix 1.

5.6.2 The aeronautical, terrain and obstacle data resolution shall be commensurate with the actual data accuracy ~~be as specified in Annex 15, Appendix 7, while the resolution for terrain and obstacle data shall be as specified in Annex 15, Appendix 8.~~

Note.— Specifications concerning the order of resolution for aeronautical, terrain and obstacle data are provided in the PANS-AIM (Doc 10066), Appendix 1.

...

~~APPENDIX 6. AERONAUTICAL DATA QUALITY REQUIREMENTS~~

Editorial Note.— Delete Appendix 6 in toto.

Origin	Rationale – Data Quality Requirements
AIS-AIMSG	The following changes to Annex 4 concerning data quality requirements are provided as a consequence of proposed changes to Annex 15 and of new requirements contained in PANS-AIM: a) the definition of data quality is amended, for consistency with the new data quality definition in Annex 15; b) provisions with respect to aeronautical, terrain and obstacle data quality requirements are updated for consistency with requirements contained in Annex 15; c) all tables containing aeronautical data quality requirements (that were published in Annexes 4, 11, 14, Volumes I and II and Annex 15) are moved to Appendix 1 of PANS-AIM. This is to ensure all requirements relating to data quality can be found in the same location. References are updated accordingly; and d) some paragraphs are deleted as they repeat requirements already contained in Annex 15 and PANS-AIM.

INITIAL PROPOSAL 2
related to CRC - Performance-based requirements

CHAPTER 2. GENERAL SPECIFICATIONS

...

2.17 Aeronautical data

...

2.17.54 ~~Electronic aeronautical data sets shall be protected by the inclusion in the data sets of a 32-bit cyclic redundancy check (CRC) implemented by the application dealing with the data sets. This shall apply to the protection of all integrity levels of data sets as specified in 2.17.3 Digital data error detection techniques shall be used during the transmission and/or storage of aeronautical data and digital data sets.~~

Note.— Detailed specifications concerning digital data error detection techniques are contained in PANS-AIM (Doc 10066).

Note.— ~~Guidance material on the aeronautical data quality requirements (accuracy, resolution, integrity, protection and traceability) is contained in the World Geodetic System — 1984 (WGS 84) Manual (Doc 9674). Supporting material in respect of the provisions of Appendix 6 related to chart resolution and integrity of aeronautical data is contained in RTCA Document DO-201A and European Organization for Civil Aviation Equipment (EUROCAE) Document ED-77 — Industry Requirements for Aeronautical Information.~~

Origin	Rationale CRC - Performance-based requirements
AIS-AIMSG	Provisions relating to CRCs were first introduced into Annex 15 in Amendment 29 (July 1997). The AIS-AIMSG reviewed the purpose of CRCs in the context of “data protection” and acknowledged that the purpose was to detect errors in digital data that might be introduced during data transmission or storage. CRCs do not protect against intentional alteration of data. The AIS-AIMSG also affirmed that the current stipulation of CRCs was too prescriptive and that there were numerous cases where this had proven to be difficult to demonstrate compliance. Electronic technology is much more mature and universal than when CRCs were first introduced into the Annexes; it is also important to recognize that the checksum validation is often already built into many of the applications used today. Moreover, there is a need to start considering protection mechanisms that guard against intentional corruption of data. The AIS-AIMSG agreed to introduce performance based requirements to maintain data integrity by implementing a mechanism to detect errors in digital data introduced during transmission or storage.

— — — — —

ATTACHMENT K to State letter AN 2/2.1.1-17/22

PROPOSED AMENDMENT TO ANNEX 6, PART I

NOTES ON THE PRESENTATION OF THE PROPOSED AMENDMENT

The text of the amendment is arranged to show deleted text with a line through it and new text highlighted with grey shading, as shown below:

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**TEXT OF PROPOSED AMENDMENT TO THE
INTERNATIONAL STANDARDS
AND RECOMMENDED PRACTICES**

OPERATION OF AIRCRAFT

**ANNEX 6
TO THE CONVENTION ON INTERNATIONAL CIVIL AVIATION**

PART I — INTERNATIONAL COMMERCIAL AIR TRANSPORT — AEROPLANES

**INITIAL PROPOSAL 1
related to change of references**

**CHAPTER 5. AEROPLANE PERFORMANCE
OPERATING LIMITATIONS**

...

5.3 Obstacle data

5.3.1 Obstacle data shall be provided to enable the operator to develop procedures to comply with 5.2.8.

Note.— See Annex 4 and Annex 15, Chapter 5 and Appendix 1 and PANS-AIM, Chapter 5 for methods of presentation of certain obstacle data.

...

Origin	Rationale – Change of references
AIS-AIMSG	This is a consequential amendment to the restructuring of Annex 15 and the introduction of a new PANS-AIM. References have been updated accordingly.

ATTACHMENT L to State letter AN 2/2.1.1-17/22

PROPOSED AMENDMENT TO ANNEX 9

NOTES ON THE PRESENTATION OF THE PROPOSED AMENDMENT

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**TEXT OF PROPOSED AMENDMENT TO THE
INTERNATIONAL STANDARDS
AND RECOMMENDED PRACTICES**

FACILITATION

**ANNEX 9
TO THE CONVENTION ON INTERNATIONAL CIVIL AVIATION**

**INITIAL PROPOSAL 1
related to change of references**

FOREWORD

...

Action by Contracting States

Promulgation of information. The establishment and withdrawal of and changes to facilities, services and procedures affecting aircraft operations provided in accordance with the Standards and Recommended Practices specified in this Annex should be notified and take effect in accordance with the provisions of Annex 15.

Contracting States should make every effort to publish the FAL information required by Annex 15 (as amplified by the *Aeronautical Information Services Manual* — Doc 8126) and, in particular, ensure that they conform with the requirements as to presentation and contents of such information prescribed by detailed in the Fourteenth Edition of Annex 15.

...

Origin	Rationale – Change of references
AIS-AIMSG	This is a consequential amendment to the restructuring of Annex 15. References have been updated accordingly.

ATTACHMENT M to State letter AN 2/2.1.1-17/22

PROPOSED AMENDMENT TO ANNEX 10, VOLUME I

NOTES ON THE PRESENTATION OF THE PROPOSED AMENDMENT

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TEXT OF PROPOSED AMENDMENT TO THE
INTERNATIONAL STANDARDS
AND RECOMMENDED PRACTICES

AERONAUTICAL TELECOMMUNICATIONS

ANNEX 10
TO THE CONVENTION ON INTERNATIONAL CIVIL AVIATION

VOLUME I — RADIO NAVIGATION AIDS

INITIAL PROPOSAL 1
related to change of references

...

CHAPTER 3. SPECIFICATIONS FOR RADIO NAVIGATION AIDS

...

3.1 Specification for ILS

...

3.1.7 VHF marker beacons

...

3.1.7.6 Siting

...

3.1.7.6.5 The positions of marker beacons, or where applicable, the equivalent distance(s) indicated by the DME when used as an alternative to part or all of the marker beacon component of the ILS, shall be published in accordance with the provisions of Annex 15.

Note.— Detailed specifications concerning publication of marker beacons positions or equivalent distance(s) are contained in PANS-AIM (Doc 10066), Appendix 2.

...

3.7 Requirements for the Global Navigation Satellite System (GNSS)

...

3.7.2 General

...

3.7.2.3 Space and time reference

3.7.2.3.1 *Space reference.* The position information provided by the GNSS to the user shall be expressed in terms of the World Geodetic System — 1984 (WGS-84) geodetic reference datum.

Note 1.— SARPs for WGS-84 are contained in Annex 4, Chapter 2, Annex 11, Chapter 2, Annex 14, Volumes I and II, Chapter 21 and Annex 15, Chapter 31.

...

**ATTACHMENT C. INFORMATION AND MATERIAL FOR
GUIDANCE IN THE APPLICATION OF THE STANDARDS AND
RECOMMENDED PRACTICES FOR ILS, VOR, PAR, 75 MHz
MARKER BEACONS (EN-ROUTE), NDB AND DME**

...

7.2 Guidance material concerning DME/N only

...

7.2.3 DME-DME RNAV

...

7.2.3.3 Errors in published DME facility locations will result in RNAV position errors. It is therefore important that DME positions are correctly surveyed and that adequate procedures are in place to ensure that the location data are correctly published. For DME facilities collocated with VOR, the DME position should be separately surveyed and published if the separation distance exceeds 30 m (100 ft).

Note.— ~~Standards for~~ Specifications concerning data quality and publication of DME location information are ~~given~~ contained in Annex 15—Aeronautical Information Services PANS-AIM (Doc 10066), Appendix 1.

Origin	Rationale – Change of references
AIS-AIMSG	This is a consequential amendment to the restructuring of Annex 15 and the introduction of a new PANS-AIM. References have been updated accordingly.

— — — — —

ATTACHMENT N to State letter AN 2/2.1.1-17/22

PROPOSED AMENDMENT TO ANNEX 10, VOLUME II

NOTES ON THE PRESENTATION OF THE PROPOSED AMENDMENT

The text of the amendment is arranged to show deleted text with a line through it and new text highlighted with grey shading, as shown below:

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New text to replace existing text

TEXT OF PROPOSED AMENDMENT TO THE
INTERNATIONAL STANDARDS
AND RECOMMENDED PRACTICES

AERONAUTICAL TELECOMMUNICATIONS

ANNEX 10
TO THE CONVENTION ON INTERNATIONAL CIVIL AVIATION

VOLUME II — COMMUNICATION PROCEDURES INCLUDING THOSE WITH PANS
STATUS

INITIAL PROPOSAL 1
related to change of references

CHAPTER 4. AERONAUTICAL FIXED SERVICE (AFS)

...

4.4 AERONAUTICAL FIXED TELECOMMUNICATION NETWORK (AFTN)

...

4.4.14 Predetermined distribution system for AFTN messages

...

4.4.14.2 The Predetermined Distribution Addressee Indicator (PDAI) shall be constructed as follows:

...

c) The fifth, sixth and seventh letters:

- 1) The fifth, sixth and seventh letters taken from the series A to Z and denoting the national and/or international distribution list(s) to be used by the receiving AFTN centre;
- 2) “N” and “S”, as the fifth letter, are reserved for NOTAM and SNOWTAM respectively (~~see Appendix 5 to Annex 15~~ detailed specifications concerning NOTAM, including formats for SNOWTAM are contained in PANS-AIM (Doc 10066);

...

8.1.1 Data link initiation capability (DLIC)

8.1.1.1 GENERAL

8.1.1.1.1 **PANS.**— *Before entering an airspace where data link applications are used by the ATS unit, data link communications shall be initiated between the aircraft and the ATS unit in order to register the aircraft and, when necessary, allow the start of a data link application. This shall be initiated by the aircraft, either automatically or by the pilot, or by the ATS unit on address forwarding.*

8.1.1.1.2 **PANS.**— *The logon address associated with an ATS unit shall be published in the Aeronautical Information Publications in accordance with Annex 15.*

Note 1.— A given FIR may have multiple logon addresses; and more than one FIR may share the same logon address.

Note 2.— Detailed specifications concerning Aeronautical Information Publications presentation and contents are contained in PANS-AIM (Doc 10066), Appendix 2.

...

Origin	Rationale – Change of references
AIS-AIMSG	This is a consequential amendment to the restructuring of Annex 15 and the introduction of a new PANS-AIM. References have been updated accordingly.

— — — — —

ATTACHMENT O to State letter AN 2/2.1.1-17/22

PROPOSED AMENDMENT TO ANNEX 11

NOTES ON THE PRESENTATION OF THE PROPOSED AMENDMENT

The text of the amendment is arranged to show deleted text with a line through it and new text highlighted with grey shading, as shown below:

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TEXT OF PROPOSED AMENDMENT TO THE
INTERNATIONAL STANDARDS
AND RECOMMENDED PRACTICES

AIR TRAFFIC SERVICES

ANNEX 11
TO THE CONVENTION ON INTERNATIONAL CIVIL AVIATION

INITIAL PROPOSAL 1
related to Data Quality Requirements

TABLE OF CONTENTS

...

~~APPENDIX 5. Aeronautical data quality requirements APP 5-1~~

CHAPTER 1. DEFINITIONS

...

Data Accuracy. A degree of conformance between the estimated or measured value and the true value.

Note. ~~For measured positional data the accuracy is normally expressed in terms of a distance from a stated position within which there is a defined confidence of the true position falling.~~

...

Data quality. A degree or level of confidence that the data provided meet the requirements of the data user in terms of accuracy, resolution, integrity (or equivalent assurance level), traceability, timeliness, completeness and format.

...

Data Integrity (aeronautical data assurance level). A degree of assurance that an aeronautical data and its value has not been lost or altered since the data origination or authorized amendment.

...

CHAPTER 2. GENERAL

...

2.20 Aeronautical data

2.20.1 Determination and reporting of air traffic services-related aeronautical data shall be in accordance with the accuracy and integrity classification required to meet the needs of the end-user of aeronautical data requirements set forth in Tables 1 to 5 contained in Appendix 5 while taking into account the established quality system procedures. Accuracy requirements for aeronautical data are based upon a 95 per cent confidence level, and in that respect three types of positional data shall be

~~identified: surveyed points (e.g. navigation aids positions), calculated points (mathematical calculations from the known surveyed points of points in space/fixes) and declared points (e.g. flight information region boundary points).~~

Note.—~~Specifications governing the quality system are given in Annex 15, Chapter 3. Specifications concerning the accuracy and integrity classification of air traffic services-related aeronautical data are contained in PANS-AIM (Doc 10066), Appendix 1.~~

~~2.20.2 Contracting States shall ensure that integrity of aeronautical data is maintained throughout the data process from survey/origin to the next intended user. Based on the applicable integrity classification, the validation and verification procedures shall:~~

- ~~a) for routine data: avoid corruption throughout the processing of the data;~~
- ~~b) for essential data: assure corruption does not occur at any stage of the entire process and may include additional processes as needed to address potential risks in the overall system architecture to further assure data integrity at this level; and~~
- ~~c) for critical data: assure corruption does not occur at any stage of the entire process and include additional integrity assurance procedures to fully mitigate the effects of faults identified by thorough analysis of the overall system architecture as potential data integrity risks.~~

Note.—~~Guidance material in respect to the processing of aeronautical data and aeronautical information is contained in RTCA Document DO-200A and European Organization for Civil Aviation Equipment (EUROCAE) Document ED-76—Standards for Processing Aeronautical Data.~~

...

~~2.20.4 Geographical coordinates indicating latitude and longitude shall be determined and reported to the aeronautical information services authority in terms of the World Geodetic System—1984 (WGS-84) geodetic reference datum, identifying those geographical coordinates which have been transformed into WGS-84 coordinates by mathematical means and whose accuracy of original field work does not meet the requirements in Appendix 5, Table 1.~~

~~2.20.5 The order of accuracy of the field work and determinations and calculations derived therefrom shall be such that the resulting operational navigation data for the phases of flight will be within the maximum deviations, with respect to an appropriate reference frame, as indicated in the tables contained in Appendix 5.~~

Note 1.—~~An appropriate reference frame is that which enables WGS-84 to be realized on a given position and with respect to which all coordinate data are related.~~

Note 2.—~~Specifications governing the publication of aeronautical data are given in Annex 4, Chapter 2 and Annex 15, Chapter 3.~~

Note 3.—~~For those fixes and points that are serving a dual purpose, e.g. holding point and missed approach point, the higher accuracy applies.~~

...

2.22 Coordination between aeronautical information services and air traffic services authorities

...

2.22.4 The air traffic services responsible for the provision of raw aeronautical information/data to the aeronautical information services shall do so while taking into account accuracy and integrity requirements required to meet the needs of the end-user of aeronautical data for aeronautical data as specified in Appendix 5 to this Annex.

Note 1.— Specifications concerning the accuracy and integrity classification of air traffic services-related aeronautical data are contained in PANS-AIM (Doc 10066), Appendix 1.

Note 2.— Specifications for the issue of a NOTAM, SNOWTAM and ASHTAM are contained in Annex 15, Chapter 56.

Note 3.— Reports of volcanic activity comprise the information detailed in Annex 3, Chapter 4.

Note 4.— AIRAC information is distributed by the aeronautical information service 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.

Note 5.— The schedule of the predetermined, internationally agreed AIRAC common effective dates at intervals of 28 days and guidance for the AIRAC use are contained in the Aeronautical Information Services Manual (Doc 8126, Chapter 2, 2.6).

...

~~APPENDIX 5. AERONAUTICAL DATA QUALITY REQUIREMENTS~~

Editorial Note.— Delete Appendix 5 in toto.

...

Origin	Rationale – Data Quality requirements
AIS-AIMSG	The following changes to Annex 11 concerning data quality requirements are provided as a consequence of proposed changes to Annex 15 and new requirements contained in PANS-AIM: a) all tables containing aeronautical data quality requirements (that were published in Annexes 4, 11, 14 Volumes I and II and Annex 15) are moved to Appendix 1 of PANS-AIM. This is to ensure all requirements relating to data quality can be found in the same location. References have been updated accordingly; b) provisions with respect to air traffic services-related data quality requirements are updated for consistency with requirements contained in Annex 15; and c) paragraphs 2.20.2, 2.20.4 and 2.20.5 are deleted as repeat requirements already contained in Annex 15 and the PANS-AIM.

INITIAL PROPOSAL 2 related to CRC – Performance-based requirements

CHAPTER 2. GENERAL

...

2.20 Aeronautical data

2.20.32 ~~Electronic aeronautical data sets shall be protected by the inclusion in the data sets of a 32-bit cyclic redundancy check (CRC) implemented by the application dealing with the data sets. This shall apply to the protection of all integrity levels of data sets as specified in 2.20.2. Digital data error detection techniques shall be used during the transmission and/or storage of aeronautical data and digital data sets.~~

Note.— Detailed specifications concerning digital data error detection techniques are contained in PANS-AIM (Doc 10066).

Note 1.— The requirement in 2.20.3 does not apply to the communications systems used for the transfer of data sets.

Note 2.— Guidance material on the use of a 32-bit CRC algorithm to implement a protection of electronic aeronautical data sets is contained in the Aeronautical Information Services Manual (Doc 8126).

...

Origin	Rationale CRC - Performance-based requirements
AIS-AIMSG	Provisions relating to CRCs were first introduced into Annex 15 in Amendment 29 (July 1997). The AIS-AIMSG reviewed the purpose of CRCs in the context of “data protection” and acknowledged that the purpose was to detect errors in digital data that might be introduced during data transmission or storage. CRCs do not protect against intentional alteration of data. The AIS-AIMSG also affirmed that the current stipulation of CRCs was too prescriptive and that there were numerous cases where this had proven to be difficult to demonstrate compliance. Electronic technology is much more mature and universal than when CRCs were first introduced into the Annexes; it is also important to recognize that the checksum validation is often already built into many of the applications used today. Moreover, there is a need to start considering protection mechanisms that guard against intentional corruption of data. The AIS-AIMSG agreed to introduce performance-based requirements to maintain data integrity by implementing a mechanism to detect errors in digital data introduced during transmission or storage.

INITIAL PROPOSAL 3 related to change of references

CHAPTER 2. GENERAL

...

2.22 Coordination between aeronautical information service and air traffic services authorities

...

2.22.3 Of particular importance are changes to aeronautical information that affect charts and/or computer-based navigation systems which qualify to be notified by the Aeronautical Information Regulation and Control (AIRAC) system, as specified in Annex 15, Chapter 6 ~~and Appendix 4~~. The predetermined, internationally agreed AIRAC effective dates in addition to 14 days postage time shall be observed by the responsible air traffic services when submitting the raw information/data to aeronautical information services.

Note.— Detailed specifications concerning the AIRAC system are contained in PANS-AIM (Doc 10066), Chapter 6.

...

2.23 Minimum flight altitudes

Minimum flight altitudes shall be determined and promulgated by each Contracting State for each ATS route and control area over its territory. The minimum flight altitudes determined shall provide a minimum clearance above the controlling obstacle located within the areas concerned.

Note.— The requirements for publication by States of minimum flight altitudes and of the criteria used to determine them are contained in ~~Annex 15~~ PANS-AIM (Doc 10066), Appendix 42. Detailed obstacle clearance criteria are contained in PANS-OPS (Doc 8168), Volume II.

...

2.32 Identification and delineation of prohibited, restricted and danger areas

2.32.1 Each prohibited area, restricted area, or danger area established by a State shall, upon initial establishment, be given an identification and full details shall be promulgated.

Note.— See ~~Annex 15~~ PANS-AIM (Doc 10066), Appendix 42, ENR 5.1.

...

APPENDIX 1. PRINCIPLES GOVERNING THE IDENTIFICATION OF NAVIGATION SPECIFICATIONS AND THE IDENTIFICATION OF ATS ROUTES OTHER THAN STANDARD DEPARTURE AND ARRIVAL ROUTES

...

1. Designators for ATS routes and navigation specifications

1.1 The purpose of a system of route designators and navigation specification(s) applicable to specified ATS route segment(s), route(s) or area is to allow both pilots and ATS, taking into account automation requirements:

- a) to make unambiguous reference to any ATS route without the need to resort to the use of geographical coordinates or other means in order to describe it;
- b) to relate an ATS route to a specific vertical structure of the airspace, as applicable;
- c) to indicate a required level of navigation performance accuracy, when operating along an ATS route or within a specified area; and
- d) to indicate that a route is used primarily or exclusively by certain types of aircraft.

Note 1.— Specifications governing concerning the publication of navigation specifications are given in Annex 4, Chapter 7, and Annex 15 PANS-AIM (Doc 10066), Appendix 12.

...

Origin	Rationale - Change of references
AIS-AIMSG	This is a consequential amendment to the restructuring of Annex 15 and the introduction of a new PANS-AIM. References have been updated accordingly.

ATTACHMENT P to State letter AN 2/2.1.1-17/22

PROPOSED AMENDMENT TO ANNEX 14, VOLUME I

NOTES ON THE PRESENTATION OF THE PROPOSED AMENDMENT

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**TEXT OF PROPOSED AMENDMENT TO THE
INTERNATIONAL STANDARDS
AND RECOMMENDED PRACTICES**

AERODROMES

**ANNEX 14
TO THE CONVENTION ON INTERNATIONAL CIVIL AVIATION
VOLUME I — AERODROME DESIGN AND OPERATIONS**

INITIAL PROPOSAL 1 related to change of references

PUBLICATIONS

(related to the specifications of this Annex)

...

Procedures for Air Navigation Services — Aerodromes (PANS-Aerodromes) (Doc 9981)

Procedures for Air Navigation Services — Aircraft Operations (PANS-OPS) (Doc 8168)

Volume I — *Flight Procedures*

Volume II — *Construction of Visual and Instrument Flight Procedures*

Procedures for Air Navigation Services — Air Traffic Management (PANS-ATM) (Doc 4444)

Procedures for Air Navigation Services — Aeronautical Information Management (PANS-AIM)
(Doc 10066)

...

CHAPTER 1. GENERAL

...

1.3 Common reference systems

...

1.3.3 Temporal reference system

...

1.3.3.2 When a different temporal reference system is used, this shall be indicated in GEN 2.1.2 of the Aeronautical Information Publication (AIP); ~~see Annex 15, Appendix 1.~~

Note.— See PANS-AIM (Doc 10066), Appendix 2.

1.4 Certification of aerodromes

Note.— The intent of these specifications is to ensure the establishment of a regulatory regime so that compliance with the specifications in this Annex can be effectively enforced. It is recognized that the methods of ownership, operation and surveillance of aerodromes differ among States. The most effective and transparent means of ensuring compliance with applicable specifications is the

availability of a separate safety oversight entity and a well-defined safety oversight mechanism with support of appropriate legislation to be able to carry out the function of safety regulation of aerodromes. When an aerodrome is granted a certificate, it signifies to aircraft operators and other organizations operating on the aerodrome that, at the time of certification, the aerodrome meets the specifications regarding the facility and its operation, and that it has, according to the certifying authority, the capability to maintain these specifications for the period of validity of the certificate. The certification process also establishes the baseline for continued monitoring of compliance with the specifications. Information on the status of certification of aerodromes would need to be provided to the appropriate aeronautical information services for promulgation in the Aeronautical Information Publication (AIP). See 2.13.1 and ~~Annex 15~~ PANS-AIM (Doc 10066), Appendix 42, AD 1.5.

...

1.7 Specific procedures for aerodrome operations

Introductory Note.— This section introduces PANS-Aerodromes (Doc 9981) for use by an aerodrome undertaking an assessment of its compatibility with the type of traffic or operation it is intending to accommodate. The material in the PANS-Aerodromes addresses operational issues faced by existing aerodromes and provides the necessary procedures to ensure the continued safety of operations. Where alternative measures, operational procedures and operating restrictions have been developed, these are detailed in the aerodrome manual and reviewed periodically to assess their continued validity. The PANS-Aerodromes does not substitute nor circumvent the provisions contained in this Annex. It is expected that infrastructure on an existing aerodrome or a new aerodrome will fully comply with the requirements in this Annex. See Annex 15, ~~4.1.2~~ 5.2.2.2 (c) on a State's responsibilities for the listing of its differences to the related ICAO Procedures in its Aeronautical Information Publication.

...

1.7.2 Information concerning alternative measures, operational procedures and operating restrictions implemented at an aerodrome arising from 1.7.1 shall be promulgated.

Note 1.— See ~~Annex 15~~ PANS-AIM (Doc 10066), Appendix 42, AD 2.20 on the provision of a detailed description of local traffic regulations.

Note 2.— See PANS-Aerodromes (Doc 9981), Chapter 3, section 3.6 on promulgation of safety information.

...

CHAPTER 2. AERODROME DATA

2.1 Aeronautical data

...

2.1.2 **Recommendation.**— Aerodrome mapping data should be made available to the aeronautical information services for aerodromes deemed relevant by States where safety and/or performance-based operations suggest possible benefits.

Note.— Aerodrome mapping databases related provisions are contained in Annex 15, Chapter ~~445~~ and PANS-AIM (Doc 10066), Chapter 5.

...

2.9 Condition of the movement area and related facilities

2.9.1 Information on the condition of the movement area and the operational status of related facilities shall be provided to the appropriate aeronautical information services units, and similar information of operational significance to the air traffic services units, to enable those units to provide the necessary information to arriving and departing aircraft. The information shall be kept up to date and changes in conditions reported without delay.

Note.— Nature, format and conditions of the information to be provided are specified in Annex 15 PANS-AIM (Doc 10066) and PANS-ATM (Doc 4444).

...

Water on a runway

...

2.9.7 Notification shall be given to aerodrome users when the friction level of a paved runway or portion thereof is less than that specified by the State in accordance with 10.2.3.

Note.— Guidance on conducting a runway surface friction characteristics evaluation programme that includes determining and expressing the minimum friction level is provided in Attachment A, Section 7.

Snow, slush, ice or frost on a runway

Note 1.— The intent of these specifications is to satisfy the SNOWTAM and NOTAM promulgation requirements contained in Annex 15 and PANS-AIM (Doc 10066).

...

2.13.3 Of a particular importance are changes to aeronautical information that affect charts and/or computer-based navigation systems which qualify to be notified by the aeronautical information regulation and control (AIRAC) system, as specified in Annex 15, Chapter 6. ~~and Appendix 4.~~ The predetermined, internationally agreed AIRAC effective dates in addition to 14 days postage time shall be observed by the responsible aerodrome services when submitting the raw information/data to aeronautical information services.

Note.— Detailed specifications concerning the AIRAC system are contained in PANS-AIM (Doc 10066), Chapter 6.

...

CHAPTER 9. AERODROME OPERATIONAL SERVICES, EQUIPMENT AND INSTALLATIONS

...

9.4 Wildlife strike hazard reduction

...

9.4.1 The wildlife strike hazard on, or in the vicinity of, an aerodrome shall be assessed through:

- a) the establishment of a national procedure for recording and reporting wildlife strikes to aircraft;

- b) the collection of information from aircraft operators, aerodrome personnel and other sources on the presence of wildlife on or around the aerodrome constituting a potential hazard to aircraft operations; and
- c) an ongoing evaluation of the wildlife hazard by competent personnel.

Note.— See Annex 15, Chapter 85.

...

9.12 Autonomous runway incursion warning system

...

9.12.2 Where an ARIWS is installed at an aerodrome, information on its characteristics and status shall be provided to the appropriate aeronautical information services for promulgation in the AIP with the description of the aerodrome surface movement guidance and control system and markings as specified in Annex 15, ~~Appendix 1, AD 2.9.~~

Note.— Detailed specifications concerning the AIP are contained in PANS-AIM (Doc 10066).

...

CHAPTER 10. AERODROME MAINTENANCE

...

10.3 Removal of contaminants

...

10.3.4 **Recommendation.**— *Whenever the clearance of snow, slush, ice, etc., from the various parts of the movement area cannot be carried out simultaneously, the order of priority after the runway(s) in use should be set in consultation with the affected parties such as rescue and firefighting service and documented in a snow plan.*

Note 1.— See ~~Annex 15~~ PANS-AIM (Doc 10066), Appendix 12, Part 3, AD 1.2.2 for information to be promulgated in an AIP concerning a snow plan. The Aeronautical Information Services Manual (Doc 8126), ~~Chapter 5~~ contains guidance on the description of a snow plan including general policy concerning operational priorities established for the clearance of movement areas.

...

ATTACHMENT A. GUIDANCE MATERIAL SUPPLEMENTARY TO ANNEX 14, VOLUME I

...

6. Assessing the surface friction characteristics of snow-, slush-, ice- and frost-covered paved surfaces

...

6.3 The friction conditions of a runway can be assessed in descriptive terms of “estimated surface friction”. The estimated surface friction is categorized as good, medium to good, medium, medium to poor, and poor, and promulgated in ~~Annex 15~~ PANS-AIM (Doc 10066), Appendix 24, “SNOWTAM format” as well as in PANS-ATM, Chapter 12, 12.3, “ATC phraseologies”.

...

21. Autonomous runway incursion warning system (ARIWS)

...

21.5 Promulgation of information

21.5.1 Information on the characteristics and status of an ARIWS at an aerodrome are promulgated in the AIP section AD 2.9, in PANS-AIM (Doc 10066) and its status updated as necessary through NOTAM or ATIS in compliance with 2.9.1 of this Annex.

...

Origin	Rationale – Change of references
AIS-AIMSG	This is a consequential amendment to the restructuring of Annex 15 and the introduction of a new PANS-AIM. References have been updated accordingly.

INITIAL PROPOSAL 2 related to Data Quality Requirements

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...

~~APPENDIX 5. Aeronautical data quality requirements APP 5-1~~

...

CHAPTER 1. GENERAL

...

Data Accuracy. A degree of conformance between the estimated or measured value and the true value.

~~Note. — For measured positional data the accuracy is normally expressed in terms of a distance from a stated position within which there is a defined confidence of the true position falling.~~

...

Data quality. A degree or level of confidence that the data provided meet the requirements of the data user in terms of accuracy, resolution, integrity (or equivalent assurance level), traceability, timeliness, completeness and format.

...

Data Integrity (aeronautical data assurance level). A degree of assurance that an aeronautical data and its value has not been lost or altered since the data origination or authorized amendment.

...

CHAPTER 2. AERODROME DATA

2.1 Aeronautical data

2.1.1 Determination and reporting of aerodrome-related aeronautical data shall be in accordance with the accuracy and integrity classification required to meet the needs of the end-users of aeronautical data requirements set forth in Tables A5-1 to A5-5 contained in Appendix 5 while taking into account the established quality system procedures. Accuracy requirements for aeronautical data are based upon a 95 per cent confidence level and in that respect, three types of positional data shall be identified: surveyed points (e.g. runway threshold), calculated points (mathematical calculations from the known surveyed points of points in space, fixes) and declared points (e.g. flight information region boundary points).

Note.—*Specifications governing the quality system are given in Annex 15, Chapter 3 Specifications concerning the accuracy and integrity classification related to aerodrome-related aeronautical data are contained in PANS-AIM (Doc 10066), Appendix 1.*

...

2.1.3 Where made available in accordance with 2.1.2, the selection of the aerodrome mapping data features to be collected shall be made with consideration of the intended applications.

Note 1.—*It is intended that the selection of the features to be collected match a defined operational need.*

~~2.1.4 Where made available in accordance with 2.1.2, aerodrome mapping data shall comply with the accuracy and integrity requirements in Appendix 5.~~

Note 2.—*Aerodrome mapping databases can be provided at one of two levels of quality — fine or medium. These levels and the corresponding numerical requirements are defined in RTCA Document DO-272B and European Organization for Civil Aviation Equipment (EUROCAE) Document ED-99C — User Requirements for Aerodrome Mapping Information.*

~~2.1.5 Contracting States shall ensure that integrity of aeronautical data is maintained throughout the data process from survey/origin to the next intended user. Based on the applicable integrity classification, the validation and verification procedures shall:~~

- ~~a) for routine data: avoid corruption throughout the processing of the data;~~
- ~~b) for essential data: assure corruption does not occur at any stage of the entire process and may include additional processes as needed to address potential risks in the overall system architecture to further assure data integrity at this level; and~~
- ~~c) for critical data: assure corruption does not occur at any stage of the entire process and include additional integrity assurance procedures to fully mitigate the effects of faults identified by thorough analysis of the overall system architecture as potential data integrity risks.~~

Note.—*Guidance material in respect to the processing of aeronautical data and aeronautical information is contained in RTCA Document DO-200A and European Organization for Civil Aviation Equipment (EUROCAE) Document ED-76A — Standards for Processing Aeronautical Data.*

...

~~2.1.8 Geographical coordinates indicating latitude and longitude shall be determined and reported to the aeronautical information services authority in terms of the World Geodetic System~~

~~1984 (WGS 84) geodetic reference datum, identifying those geographical coordinates which have been transformed into WGS 84 coordinates by mathematical means and whose accuracy of original field work does not meet the requirements in Appendix 5, Table A5-1.~~

~~2.1.9 The order of accuracy of the field work shall be such that the resulting operational navigation data for the phases of flight will be within the maximum deviations, with respect to an appropriate reference frame, as indicated in the tables contained in Appendix 5.~~

~~2.1.10 In addition to the elevation (referenced to mean sea level) of the specific surveyed ground positions at aerodromes, geoid undulation (referenced to the WGS 84 ellipsoid) for those positions as indicated in Appendix 5 shall be determined and reported to the aeronautical information services authority.~~

~~Note 1.— An appropriate reference frame is that which enables WGS 84 to be realized on a given aerodrome and with respect to which all coordinate data are related.~~

~~Note 2.— Specifications governing the publication of WGS 84 coordinates are given in Annex 4—Aeronautical Charts, Chapter 2 and Annex 15, Chapter 1.~~

...

2.5 Aerodrome dimensions and related information

...

2.5.5 The geographical coordinates of obstacles in Area 2 (the part within the aerodrome boundary) and in Area 3 shall be measured and reported to the aeronautical information services authority in degrees, minutes, seconds and tenths of seconds. In addition, the top elevation, type, marking and lighting (if any) of obstacles shall be reported to the aeronautical information services authority.

Note 1.— See Annex 15, Appendix 8¹, for graphical illustrations of obstacle data collection surfaces and criteria used to identify obstacles in Areas 2 and 3.

Note 2.— ~~Appendix 5~~ PANS-AIM (Doc 10066), Appendix 1 and Appendix 8 provides requirements for obstacle data determination in Areas 2 and 3.

Note 3.— ~~Implementation of Annex 15, provisions 10.1.4 and 10.1.6, concerning the availability, as of 12 November 2015, of obstacle data according to Area 2 and Area 3 specifications would be facilitated by appropriate advance planning for the collection and processing of such data.~~

...

2.13 Coordination between aeronautical information services and aerodrome authorities

...

2.13.4 The aerodrome services responsible for the provision of raw aeronautical information/data to the aeronautical information services shall do that while taking into account accuracy and integrity requirements ~~required to meet the needs of the end-user of aeronautical data for aeronautical data as specified in Appendix 5 to this Annex.~~

Note 1.— Specifications concerning the accuracy and integrity classification of aerodrome-related aeronautical data are contained in PANS-AIM (Doc 10066), Appendix 1.

Note 12.— Specifications for the issue of NOTAM and SNOWTAM are contained in Annex 15, Chapter 56 and PANS-AIM (Doc 10066), Appendices 63 and 24, respectively.

Note 23.— AIRAC information is distributed by the AIS 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.

Note 34.— The schedule of the predetermined internationally agreed AIRAC common effective dates at intervals of 28 days and guidance for the AIRAC use are contained in the Aeronautical Information Services Manual (Doc 8126, Chapter 2).

...

~~APPENDIX 5. AERONAUTICAL DATA QUALITY REQUIREMENTS~~

Editorial Note.— Delete Appendix 5 in toto.

...

Origin	Rationale – Data Quality Requirements
AIS-AIMSG	The following changes to Annex 14 Volume I concerning data quality requirements are provided, as a consequence of proposed changes to Annex 15 and new requirements contained in PANS-AIM: a) all tables containing aeronautical data quality requirements that were published in Annexes 4, 11, 14 Volume I and Volume II and Annex 15 are moved to Appendix 1 of PANS-AIM. This is to ensure all requirements relating to data quality can be found in the same location. They are contained in Tables A1-1, A1-5 and A1-6; b) provisions with respect to aerodrome-related data quality requirements are updated for consistency with requirements contained in Annex 15; and c) paragraphs 2.1.5 and 2.1.8 to 2.1.10 are deleted as they are a repetition of requirements already contained in Annex 15 and the PANS-AIM.

INITIAL PROPOSAL 3 related to CRC – Performance-based requirements

CHAPTER 2. AERODROME DATA

2.1 Aeronautical data

...

~~2.1.64 Protection of electronic aeronautical data while stored or in transit shall be totally monitored by the cyclic redundancy check (CRC). To achieve protection of the integrity level of critical and essential aeronautical data as classified in 2.1.5, a 32 or 24 bit CRC algorithm shall apply respectively.~~ Digital data error detection techniques shall be used during the transmission and/or storage of aeronautical data and digital data sets.

Note .— Detailed specifications concerning digital data error detection techniques are contained

in PANS-AIM (Doc 10066).

~~2.1.7 Recommendation. To achieve protection of the integrity level of routine aeronautical data as classified in 2.1.5, a 16-bit CRC algorithm should apply.~~

~~Note. Guidance material on the aeronautical data quality requirements (accuracy, resolution, integrity, protection and traceability) is contained in the World Geodetic System 1984 (WGS 84) Manual (Doc 9674). Supporting material in respect of the provisions of Appendix 5 related to accuracy and integrity of aeronautical data is contained in RTCA Document DO-201A and European Organization for Civil Aviation Equipment (EUROCAE) Document ED-77, entitled Standards for Aeronautical Information.~~

...

Origin	Rationale CRC– Performance-based requirements
AIS-AIMSG	Provisions relating to CRCs were first introduced into Annex 15 in Amendment 29 (July 1997). The AIS-AIMSG reviewed the purpose of CRCs in the context of “data protection” and acknowledged that the purpose was to detect errors in digital data that might be introduced during data transmission or storage. CRCs do not protect against intentional alteration of data. The AIS-AIMSG also affirmed that the current stipulation of CRCs was too prescriptive and that there were numerous cases where this had proven to be difficult to demonstrate compliance. Electronic technology is much more mature and universal than when CRCs were first introduced into the Annexes; it is also important to recognize that the checksum validation is often already built into many of the applications used today. Moreover, there is a need to start considering protection mechanisms that guard against intentional corruption of data. The AIS-AIMSG agreed to introduce performance-based requirements to maintain data integrity by implementing a mechanism to detect errors in digital data introduced during transmission or storage.

— — — — —

ATTACHMENT Q to State letter AN 2/2.1.1-17/22

PROPOSED AMENDMENT TO ANNEX 14, VOLUME II

NOTES ON THE PRESENTATION OF THE PROPOSED AMENDMENT

The text of the amendment is arranged to show deleted text with a line through it and new text highlighted with grey shading, as shown below:

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by the replacement text which is highlighted with grey
shading.

New text to replace existing text

TEXT OF PROPOSED AMENDMENT TO THE
INTERNATIONAL STANDARDS
AND RECOMMENDED PRACTICES

AERODROMES

ANNEX 14
TO THE CONVENTION ON INTERNATIONAL CIVIL AVIATION

VOLUME II — HELIPORTS

INITIAL PROPOSAL 1
related to Data Quality Requirements

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~~APPENDIX 1. Aeronautical data quality requirements APP 1-1~~

...

CHAPTER 1. GENERAL

...

Data Accuracy. A degree of conformance between the estimated or measured value and the true value.

Note. — For measured positional data the accuracy is normally expressed in terms of a distance from a stated position within which there is a defined confidence of the true position falling.

...

Data quality. A degree or level of confidence that the data provided meet the requirements of the data user in terms of accuracy, resolution, integrity (or equivalent assurance level), traceability, timeliness, completeness and format.

...

Data Integrity (aeronautical data assurance level). A degree of assurance that an aeronautical data and its value has not been lost or altered since the data origination or authorized amendment.

...

CHAPTER 2. HELIPORT DATA

2.1 Aeronautical data

2.1.1 Determination and reporting of heliport-related aeronautical data shall be in accordance with the accuracy and integrity classification required to meet the needs of the end-user of aeronautical data requirements set forth in Tables A1-1 to A1-5 contained in Appendix 1 while taking into account the established quality system procedures. Accuracy requirements for aeronautical data are based upon a 95 per cent confidence level and in that respect, three types of positional data shall be identified: surveyed points (e.g. FATO threshold), calculated points (mathematical calculations from the known surveyed points of points in space, fixes) and declared points (e.g. flight information region boundary points).

Note.—~~Specifications governing the quality system are given in Annex 15, Chapter 3. Specifications concerning the accuracy and integrity classification related to heliport related aeronautical data are contained in PANS-AIM, Appendix 1.~~

2.1.2 ~~Contracting States shall ensure that integrity of aeronautical data is maintained throughout the data process from survey/origin to the next intended user. Based on the applicable integrity classification, the validation and verification procedures shall:~~

- a) ~~for routine data: avoid corruption throughout the processing of the data;~~
- b) ~~for essential data: assure corruption does not occur at any stage of the entire process and may include additional processes as needed to address potential risks in the overall system architecture to further assure data integrity at this level; and~~
- c) ~~for critical data: assure corruption does not occur at any stage of the entire process and include additional integrity assurance procedures to fully mitigate the effects of faults identified by thorough analysis of the overall system architecture as potential data integrity risks.~~

Note.—~~Guidance material in respect to the processing of aeronautical data and aeronautical information is contained in RTCA Document DO-200B and European Organization for Civil Aviation Equipment (EUROCAE) Document ED-76B—Standards for Processing Aeronautical Data.~~

...

2.1.5 ~~Geographical coordinates indicating latitude and longitude shall be determined and reported to the aeronautical information services authority in terms of the World Geodetic System—1984 (WGS-84) geodetic reference datum, identifying those geographical coordinates which have been transformed into WGS-84 coordinates by mathematical means and whose accuracy of original field work does not meet the requirements in Appendix 1, Table A1-1.~~

2.1.6 ~~The order of accuracy of the field work shall be such that the resulting operational navigation data for the phases of flight will be within the maximum deviations, with respect to an appropriate reference frame, as indicated in the tables contained in Appendix 1.~~

2.1.7 ~~In addition to the elevation (referenced to mean sea level) of the specific surveyed ground positions at heliports, geoid undulation (referenced to the WGS-84 ellipsoid) for those positions as indicated in Appendix 1 shall be determined and reported to the aeronautical information services authority.~~

Note 1.—~~An appropriate reference frame is that which enables WGS-84 to be realized on a given aerodrome and with respect to which all coordinate data are related.~~

~~Note 2.— Specifications governing the publication of WGS 84 coordinates are given in Annex 4, Chapter 2 and Annex 15, Chapter 3.~~

...

2.4 Heliport dimensions and related information

...

2.4.5 The geographical coordinates of obstacles in Area 2 (the part within the heliport boundary) and in Area 3 shall be measured and reported to the aeronautical information services authority in degrees, minutes, seconds and tenths of seconds. In addition, the top elevation, type, marking and lighting (if any) of obstacles shall be reported to the aeronautical information services authority.

Note 1.— See Annex 15, Appendix 81, for graphical illustrations of obstacle data collection surfaces and criteria used to identify obstacles in Areas 2 and 3.

Note 2.— PANS-AIM, Appendix 1 to this Annex provides requirements for obstacle data determination in Areas 2 and 3.

~~Note 3.— Implementation of Annex 15, provisions 10.1.4 and 10.1.6, concerning the availability, as of 12 November 2015, of obstacle data according to Area 2 and Area 3 specifications would be facilitated by appropriate advance planning for the collection and processing of such data.~~

...

2.6 Coordination between aeronautical information services and heliport authorities

...

2.6.4 The heliport services responsible for the provision of raw aeronautical information/data to the aeronautical information services shall do that while taking into account accuracy and integrity requirements required to meet the needs of the end-user of aeronautical data for aeronautical data as specified in Appendix 1 to this Annex.

Note 1.— Specifications concerning the accuracy and integrity classification of heliport-related aeronautical data are contained in PANS-AIM (Doc 10066), Appendix 1.

Note 2.— Specifications for the issue of NOTAM and SNOWTAM are contained in Annex 15, Chapter 56 and PANS-AIM, Appendices 63 and 24, respectively.

Note 3.— The AIRAC information is distributed by the AIS 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.

Note 4.— The schedule of the predetermined internationally agreed AIRAC common effective dates at intervals of 28 days and guidance for the AIRAC use are contained in the Aeronautical Information Services Manual (Doc 8126, Chapter 2, 2.6).

...

APPENDIX 1. AERONAUTICAL DATA QUALITY REQUIREMENTS

Editorial Note.— Delete Appendix 1 in toto.

...

Origin	Rationale- Data Quality Requirements
AIS-AIMSG	The following changes to Annex 14 Volume II concerning data quality requirements are provided, as a consequence of proposed changes to Annex 15 and new requirements contained in PANS-AIM: a) all tables containing aeronautical data quality requirements that were published in Annexes 4, 11, 14, Volumes I and II and Annex 15 are being moved to Appendix 1 of PANS-AIM. This is to ensure all requirements relating to data quality can be found in the same location. The data quality values are contained in Tables A1-1, A1-5 and A1-6. b) provisions with respect to heliport-related data quality requirements are updated for consistency with requirements contained in Annex 15; c) paragraphs 2.1.2 and 2.1.5 to 2.1.7 are deleted as they are a repetition of requirements already contained in Annex 15 and the PANS-AIM.

INITIAL PROPOSAL 2 related to CRC – Performance-based requirements

CHAPTER 2. HELIPORT DATA**2.1 Aeronautical data**

...

~~2.1.32 Protection of electronic aeronautical data while stored or in transit shall be totally monitored by the cyclic redundancy check (CRC). To achieve protection of the integrity level of critical and essential aeronautical data as classified in 2.1.2, a 32- or 24-bit CRC algorithm shall apply respectively. Digital data error detection techniques shall be used during the transmission and/or storage of aeronautical data and digital data sets.~~

Note .— Detailed specifications concerning digital data error detection techniques are contained in PANS-AIM (Doc 10066).

~~2.1.4 **Recommendation.**— To achieve protection of the integrity level of routine aeronautical data as classified in 2.1.2, a 16-bit CRC algorithm should apply.~~

~~*Note.— Guidance material on the aeronautical data quality requirements (accuracy, resolution, integrity, protection and traceability) is contained in the World Geodetic System—1984 (WGS-84) Manual (Doc 9674). Supporting material in respect of the provisions of Appendix 5 related to accuracy and integrity of aeronautical data is contained in RTCA Document DO-201A and European Organization for Civil Aviation Equipment (EUROCAE) Document ED-77, entitled Industry Requirements for Aeronautical Information.*~~

Origin	Rationale CRC– Performance-based requirements
AIS-AIMSG	Provisions relating to CRCs were first introduced into Annex 15 in Amendment 29 (July 1997). The AIS-AIMSG reviewed the purpose of CRCs in the context of “data protection” and acknowledged that the purpose was to detect errors in digital data that might be introduced during data transmission or storage. CRCs do not protect against intentional alteration of data. The AIS-AIMSG also affirmed that the current stipulation of CRCs was too prescriptive and that there were numerous cases where this had proven to be difficult to demonstrate compliance. Electronic technology is much more mature and universal than when CRCs were first introduced into the Annexes; it is also important to recognize that the checksum validation is often already built into many of the applications used today. Moreover, there is a need to start considering protection mechanisms that guard against intentional corruption of data. The AIS-AIMSG agreed to introduce performance-based requirements to maintain data integrity by implementing a mechanism to detect errors in digital data introduced during transmission or storage.

INITIAL PROPOSAL 3
related to change of references

CHAPTER 2. HELIPORT DATA

...

**2.6 Coordination between aeronautical
information services and heliport authorities**

...

2.6.3 Of a particular importance are changes to aeronautical information that affect charts and/or computer-based navigation systems which qualify to be notified by the ~~a~~Aeronautical ~~i~~Information ~~R~~Regulation and ~~e~~Control (AIRAC) system, as specified in Annex 15, Chapter 6 ~~and~~ ~~Appendix 4~~. The predetermined, internationally agreed AIRAC effective dates in addition to 14 days postage time shall be observed by the responsible heliport services when submitting the raw information/data to aeronautical information services.

Note.— Detailed specifications concerning the AIRAC system are contained in PANS-AIM (Doc 10066), Chapter 6.

...

Origin	Rationale- Change of references
AIS-AIMSG	This is a consequential amendment to the restructuring of Annex 15 and the introduction of a new PANS-AIM. References have been updated accordingly.

ATTACHMENT R to State letter AN 2/2.1.1-17/22

PROPOSED AMENDMENT TO PANS-ATM (DOC 4444)

NOTES ON THE PRESENTATION OF THE PROPOSED AMENDMENT

The text of the amendment is arranged to show deleted text with a line through it and new text highlighted with grey shading, as shown below:

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New text to replace existing text

**TEXT OF PROPOSED AMENDMENT TO THE
PROCEDURES FOR AIR NAVIGATION SERVICES —
AIR TRAFFIC MANAGEMENT
(PANS-ATM, Doc 4444)**

**INITIAL PROPOSAL 1
related to Change of references**

CHAPTER 8. ATS SURVEILLANCE SERVICES

...

8.1.12 The provision of ATS surveillance services shall be limited to specified areas of coverage and shall be subject to such other limitations as have been specified by the appropriate ATS authority. Adequate information on the operating methods used shall be published in aeronautical information publications, as well as operating practices and/or equipment limitations having direct effects on the operation of the air traffic services.

Note.— States will provide information on the area or areas where PSR, SSR, ADS-B and MLAT systems are in use as well as ATS surveillance services and procedures in accordance with ~~Annex 15, 4.1.1 and PANS-AIM, Appendix 13~~.

Origin	Rationale – Change of references
AIS-AIMSG	This is a consequential amendment to the restructuring of Annex 15 and the introduction of a new PANS-AIM. References have updated accordingly.

ATTACHMENT S to State letter AN 2/2.1.1-17/22

PROPOSED AMENDMENT TO PANS-OPS, VOLUME I (DOC 8168)

NOTES ON THE PRESENTATION OF THE PROPOSED AMENDMENT

The text of the amendment is arranged to show deleted text with a line through it and new text highlighted with grey shading, as shown below:

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followed by the replacement text which is highlighted with grey shading.

New text to replace existing text

**TEXT OF PROPOSED AMENDMENT TO THE
PROCEDURES FOR AIR NAVIGATION SERVICES — AIRCRAFT OPERATIONS
VOLUME I — FLIGHT PROCEDURES
(PANS-OPS, DOC 8168)**

**INITIAL PROPOSAL 1
related to change of references**

**Part III
AIRCRAFT OPERATING PROCEDURES**

**Section 1
ALTIMETER SETTING PROCEDURES
CHAPTER 4. ALTIMETER CORRECTIONS**

...

4.1.3 State's responsibility

~~Annex 15~~ PANS-AIM, Appendix 43 (Contents of Aeronautical Information Publication), indicates that States should publish in Section GEN 3.3.5, "The criteria used to determine minimum flight altitudes". If nothing is published, it should be assumed that no corrections have been applied by the State.

Origin	Rationale – Change of references
AIS-AIMSG	This is a consequential amendment to the restructuring of Annex 15 and the introduction of a new PANS-AIM. References have been updated accordingly.

ATTACHMENT T to State letter AN 2/2.1.1-17/22

PROPOSED AMENDMENT TO PANS-OPS, VOLUME II (DOC 8168)

NOTES ON THE PRESENTATION OF THE PROPOSED AMENDMENT

The text of the amendment is arranged to show deleted text with a line through it and new text highlighted with grey shading, as shown below:

~~Text to be deleted is shown with a line through it.~~

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New text to be inserted is highlighted with grey shading.

new text to be inserted

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followed by the replacement text which is highlighted
with grey shading.

new text to replace existing text

TEXT OF PROPOSED AMENDMENT TO THE
PROCEDURES FOR AIR NAVIGATION SERVICES — AIRCRAFT OPERATIONS
VOLUME II — CONSTRUCTION OF VISUAL AND INSTRUMENT FLIGHT PROCEDURES
(PANS-OPS, DOC 8168)

INITIAL PROPOSAL 1

Part I
GENERAL

Section 2
GENERAL PRINCIPLES
CHAPTER 1. GENERAL

...

1.7 INCREASED ALTITUDES/HEIGHTS FOR MOUNTAINOUS AREAS

...

1.7.2 Procedures specialists and approving authorities should be aware of the hazards involved and make proper addition, based on their experience and judgement, to limit the time in which an aircraft is exposed to lee-side turbulence and other weather phenomena associated with mountainous areas. This may be done by increasing the minimum altitude/height over the intermediate and final approach fixes so as to preclude prolonged flight at a low height above the ground. The operator's comments should also be solicited to obtain the best local information. Such increases should be included in the State's Aeronautical Information Publication (AIP), Section GEN 3.3.5, "Minimum flight altitude". See ~~Annex 15~~ PANS-AIM, Appendix 13 (Contents of Aeronautical Information Publication).

...

Part III
PERFORMANCE-BASED NAVIGATION PROCEDURES

Section 1
UNDERLYING PRINCIPLES
CHAPTER 1. RNAV CONCEPTS

...

1.6 FIXES

1.6.1 Fix identification

The fixes used are those in the general criteria. Each fix shall be determined as a waypoint as specified in ~~Annex 15~~ PANS-AIM.

Part III
PERFORMANCE-BASED NAVIGATION PROCEDURES

Section 5
PUBLICATION
CHAPTER 1. PUBLICATION AND CHARTING — GENERAL

...

1.2 NOTIFICATION OF DIFFERENCES IN AIP

The obstacle protection afforded to PBN procedures is, in most cases, predicated upon a ground track. This track is defined by a number of parameters including, inter alia, waypoint location and type, vertical path angle, maximum speed, minimum altitude, minimum bank angle and the path terminator associated with each procedure leg. If some of these parameters differ from the ICAO Standards, Recommended Practices and Procedures, they should be specified as generic to all PBN procedures with a clear statement in the GEN section of the AIP (See ~~Annex 15~~ **PANS-AIM**, Appendix ~~43~~, Part 1, GEN 1.7).

Origin	Rationale – Change of references
AIS-AIMSG	This is a consequential amendment to the restructuring of Annex 15 and the introduction of a new PANS-AIM. References have been updated accordingly.

INITIAL PROPOSAL 2

Part III
PERFORMANCE-BASED NAVIGATION PROCEDURES

Section 2
GENERAL CRITERIA

CHAPTER 6. APPLICATION OF FAS DATA BLOCK FOR SBAS AND GBAS

...

6.4 QUALITY REQUIREMENTS

...

6.4.1 This is part of the quality assurance process. The quality requirements for the main data elements of the FAS are as follows:

Data element, Accuracy, Resolution and Integrity table

Note 1.— The values between brackets are the ~~ICAO Annex 15~~ PANS-AIM, Appendix 1 requirements when different from the Annex 10 requirements. N/A stands for Not Available.

Origin	Rationale – Data Quality Requirements
AIS-AIMSG	This is a consequential amendment. All tables containing aeronautical data quality requirements that were published in Annexes 4, 11, 14 Volume I and Volume II and Annex 15 are being moved to Appendix 1 of PANS-AIM. This is to ensure all requirements relating to data quality can be found in the same location. References have updated accordingly.

ATTACHMENT U to State letter AN 2/2.1.1-17/22

PROPOSED AMENDMENT TO PANS-ABC (DOC 8400)

NOTES ON THE PRESENTATION OF THE PROPOSED AMENDMENT

The text of the amendment is arranged to show deleted text with a line through it and new text highlighted with grey shading, as shown below:

~~Text to be deleted is shown with a line through it.~~

text to be deleted

New text to be inserted is highlighted with grey shading.

new text to be inserted

~~Text to be deleted is shown with a line through it~~
followed by the replacement text which is highlighted
with grey shading.

new text to replace existing text

**TEXT OF PROPOSED AMENDMENT TO THE
PROCEDURES FOR AIR NAVIGATION SERVICES — ICAO ABBREVIATIONS AND CODES
(PANS-ABC, DOC 8400)**

INITIAL PROPOSAL 1 related to change of references

FOREWORD

...

3. Specifications governing the use of abbreviations

Specifications governing the use of abbreviations and codes are contained in the following ICAO Annexes and PANS:

...

b) use of the NOTAM Code: 5.2.5 of Annex 15;

...

THE NOTAM CODE

PREFACE

(See 5.2.25 of Annex 15 and Appendix 64 of Annex 15 PANS-AIM.)

1. Introduction

The NOTAM Code is provided to enable the coding of information regarding the establishment, condition or change of radio aids, aerodromes and lighting facilities, dangers to aircraft, or search and rescue facilities. The NOTAM Code is a comprehensive description of information contained in NOTAM. It serves as an important criterion for storage and retrieval of information, as well as for deciding whether an item is of operational significance or not. It also establishes the relevance of the NOTAM to the various types of flight operations and determines whether it must therefore be part of a pre-flight information bulletin. In addition, it assists in specifying those items which are subject to immediate notification processes. The NOTAM Code also standardizes the presentation of the related plain-language text required at Item E) of the NOTAM Format as contained in Appendix 64 of Annex 15 PANS-AIM. Thus, the NOTAM Code is the basis for determination of the qualifiers TRAFFIC, PURPOSE and SCOPE used in Q (Qualifiers) line and the related text to appear in Item E) of the NOTAM Format.

...

3. Composition

...

3.5 When a NOTAM is issued containing a checklist of valid NOTAM, use KKKK as the second, third, fourth and fifth letters. When a NOTAM containing operationally significant information is issued in accordance with ~~Appendix 4~~ and Chapter 6 of Annex 15 and Chapter 6 of PANS-AIM and when it is used to announce the existence of AIRAC AIP amendments or supplements (trigger NOTAM), insert “TT” as the fourth and fifth letters.

...

4. Significations/uniform abbreviated phraseology

The significations/approved uniform abbreviated phraseology assigned to NOTAM Code groups, as required for use in Item E) of the NOTAM Format (~~Annex 15~~ PANS-AIM, Appendix 64), are to be amplified or completed where necessary by the addition of appropriate location indicators, name of station, geographical coordinates, abbreviations, frequencies, call signs, figures and plain language. ICAO abbreviations are to be used in preference to plain language wherever possible. In order to facilitate the dissemination of NOTAM by reducing the transmission time over telecommunication channels, eliminate translation and provide a suitable pre-flight information bulletin entry, the approved uniform abbreviated phraseology assigned to each signification of a two-letter combination in the NOTAM Code — Decode part is to be used in preference to significations wherever possible.

...

7. Use of NOTAM Code groups

7.1 Five-letter NOTAM Code groups are to be used in conjunction with the NOTAM Format (Annex 15, ~~5.2.1, 5.3.2—5.4.2.1~~ and PANS-AIM, Appendix 64). They also constitute the basis for determination of the qualifiers Traffic, Purpose and Scope. Both NOTAM Code groups and NOTAM qualifiers are to be inserted in Q (Qualifiers) line of the NOTAM Format.

Note.— The most commonly used NOTAM Code groups and their respective relation with the qualifiers Traffic, Purpose and Scope are presented in the NOTAM Selection Criteria tables (Doc 8126 — Aeronautical Information Services Manual, Attachment to Appendix C).

7.2 Five-letter NOTAM Code groups are formed in the following manner:

...

Examples

Note.— In the examples of NOTAM below, the letters Q to G inclusive, each followed by a closing parenthesis, identify an item in the NOTAM Format (~~Annex 15~~ PANS-AIM, Appendix 64).

Origin	Rationale – Change of references
AIS-AIMSG	This is a consequential amendment to the restructuring of Annex 15 and the introduction of a new PANS-AIM. References have been updated accordingly.

ATTACHMENT V to State letter AN 2/2.1.1-17/22

PROPOSED AMENDMENT TO PANS-AERODROMES (DOC 9981)

NOTES ON THE PRESENTATION OF THE PROPOSED AMENDMENT

The text of the amendment is arranged to show deleted text with a line through it and new text highlighted with grey shading, as shown below:

~~Text to be deleted is shown with a line through it.~~

Text to be deleted

New text to be inserted is highlighted with grey shading.

New text to be inserted

~~Text to be deleted is shown with a line through it~~ followed by the replacement text which is highlighted with grey shading.

New text to replace existing text

**TEXT OF PROPOSED AMENDMENT TO THE
PROCEDURES FOR AIR NAVIGATION SERVICES — AERODROMES
(PANS-AERODROMES, DOC 9981)**

INITIAL PROPOSAL 1 related to changes to the SNOWTAM format

PART II – AERODROME OPERATIONAL MANAGEMENT

Chapter 1

(applicable on 5 November 2020)

**REPORTING FORMAT USING
STANDARD RUNWAY CONDITION REPORT**

**1.1 RUNWAY SURFACE CONDITION
ASSESSMENT AND REPORTING**

1.1.1 General

...

1.1.1.7 The operational practices are intended to provide the information needed to fulfil the syntax requirements for dissemination and promulgation specified in ~~Annex 15 — Aeronautical Information Services~~ the Procedures for Air Navigation Services — Aeronautical Information Management (PANS-AIM, Doc 10066) and the Procedures for Air Navigation Services — Air Traffic Management (PANS-ATM, Doc 4444).

Note.— For practical reasons, the RCR information string has been provisionally incorporated in ~~Annex 15~~ the Procedures for Air Navigation Services — Aeronautical Information Management (PANS-AIM, Doc 10066) as a revision of the SNOWTAM format.

...

1.1.2.5 The syntax for dissemination as described in the RCR template in ~~Annex 15, Appendix 2~~ the Procedures for Air Navigation Services — Aeronautical Information Management (PANS-AIM, Doc 10066), Appendix 4, is determined by the operational need of the flight crew and the capability of trained personnel to provide the information arising from an assessment.

Note.— For practical reasons, the RCR information string has been provisionally incorporated in ~~Annex 15 — Aeronautical Information Services~~ the Procedures for Air Navigation Services — Aeronautical Information Management (PANS-AIM, Doc 10066) as a revision of the SNOWTAM format.

...

Complete information string

1.1.3.6 An example of a complete information string prepared for dissemination is as follows:

[COM header and Abbreviated header] (Completed by AIS)

GG EADBZQZX EADNZQZX EADSZQZX

~~070645~~ 170229 EADDYNYX

(SWEA0151 EADD ~~02170055~~02170225

SNOWTAM 0151

[Aeroplane performance calculation section]

EADD ~~02170055~~ 09L 5/5/5 100/100/100 NR/NR/NR WET/WET/WET

02170055 09L 5/5/5 100/100/100 NR/NR/NR WET/WET/WET SNOW

~~EADD~~ 02170135 09R 5/4/3 100/50/75 NR/06/06 WET/SLUSH/SLUSH

~~EADD~~ 02170225 09C 3/2/1 75/100/100 06/12/12 SLUSH/WET SNOW/WET SNOW

[Situational awareness section]

RWY 09L SNOWBANK R20 FM CL. RWY 09R ADJ SNOWBANKS. TWY B POOR.
APRON NORTH POOR)

Origin	Rationale – Changes to the SNOWTAM format
AIS-AIMSG	These are consequential changes to the amendment proposed to the SNOWTAM format and associated examples, as provided in PANS-AIM, Appendix 4.

ATTACHMENT W to State letter AN 2/2.1.1-17/22

**RESPONSE FORM TO BE COMPLETED AND RETURNED TO ICAO TOGETHER
WITH ANY COMMENTS YOU MAY HAVE ON THE PROPOSED AMENDMENTS**

To: The Secretary General
International Civil Aviation Organization
999 Robert-Bourassa Boulevard
Montréal, Quebec
Canada, H3C 5H7

(State) _____

Please make a checkmark (✓) against one option for each amendment. If you choose options “agreement with comments” or “disagreement with comments”, **please provide your comments on separate sheets.**

	<i>Agreement without comments</i>	<i>Agreement with comments*</i>	<i>Disagreement without comments</i>	<i>Disagreement with comments</i>	<i>No position</i>
Amendment to Annex 15 — <i>Aeronautical Information Services</i> (Attachments B, C and D refer)					
Draft <i>Procedures for Air Navigation Services — Aeronautical Information Management</i> (PANS-AIM, Doc 10066) (Attachments E, F, G and H refer)					
Amendment to Annex 3 — <i>Meteorological Service for International Air Navigation</i> (Attachment I refers)					
Amendment to Annex 4 — <i>Aeronautical Charts</i> (Attachment J refers)					
Amendment to Annex 6 — <i>Operation of Aircraft, Part I — International Commercial Air Transport — Aeroplanes</i> (Attachment K refers)					
Amendment to Annex 9 — <i>Facilitation</i> (Attachment L refers)					
Amendment to Annex 10 — <i>Aeronautical Telecommunications, Volume I — Radio Navigation Aids</i> (Attachment M refers)					

	<i>Agreement without comments</i>	<i>Agreement with comments*</i>	<i>Disagreement without comments</i>	<i>Disagreement with comments</i>	<i>No position</i>
Amendment to Annex 10 — <i>Aeronautical Telecommunications</i> , Volume II — <i>Communication Procedures including those with PANS status</i> (Attachment N refers)					
Amendment to Annex 11 — <i>Air Traffic Services</i> (Attachment O refers)					
Amendment to Annex 14 — <i>Aerodromes</i> , Volume I — <i>Aerodrome Design and Operations</i> (Attachment P refers)					
Amendment to Annex 14 — <i>Aerodromes</i> , Volume II — <i>Heliports</i> (Attachment Q refers)					
Amendment to the <i>Procedures for Air Navigation Services — Air Traffic Management</i> (PANS-ATM, Doc 4444) (Attachment R refers)					
Amendment to the <i>Procedures for Air Navigation Services — Aircraft Operations</i> , Volume I — <i>Flight Procedures</i> (PANS-OPS, Doc 8168) (Attachment S refers)					
Amendment to the <i>Procedures for Air Navigation Services — Aircraft Operations</i> , Volume II — <i>Construction of Visual and Instrument Flight Procedures</i> (PANS-OPS, Doc 8168) (Attachment T refers)					
Amendment to the <i>Procedures for Air Navigation Services — ICAO Abbreviations and Codes</i> PANS-ABC (Doc 8400) (Attachment U refers)					
Amendment to the <i>Procedures for Air Navigation Services (PANS) – Aerodromes</i> (PANS-Aerodromes, Doc 9981) (Attachment V refers)					

*“Agreement with comments” indicates that your State or organization agrees with the intent and overall thrust of the amendment proposal; the comments themselves may include, as necessary, your reservations concerning certain parts of the proposal and/or offer an alternative proposal in this regard.

Signature: _____ Date: _____

ATTACHMENT X to State letter AN 2/2.1.1-17/22

RESPONSE FORM FOR COMMENTS ON THE WORDING OF THE
AMENDMENT PROPOSALS IN ONE OF THE LANGUAGES
OTHER THAN ENGLISH

(State) _____

1. Do you have comments on the wording of the amendment proposals in one of the languages other than English?

Yes

☐

No

☐

2. If yes, please indicate your comments in the space provided below (*provide additional sheets if required*):

	Reference/ Paragraph No.	Comments
Amendment to Annex 15 — <i>Aeronautical Information Services</i> (Attachments B, C and D refer)		
Draft <i>Procedures for Air Navigation Services — Aeronautical Information Management</i> (PANS-AIM, Doc 10066) (Attachments E, F, G and H refer)		
Amendment to Annex 3 — <i>Meteorological Service for International Air Navigation</i> (Attachment I refers)		
Amendment to Annex 4 — <i>Aeronautical Charts</i> (Attachment J refers)		
Amendment to Annex 6 — <i>Operation of Aircraft, Part I — International Commercial Air Transport — Aeroplanes</i> (Attachment K refers)		
Amendment to Annex 9 — <i>Facilitation</i> (Attachment L refers)		
Amendment to Annex 10 — <i>Aeronautical Telecommunications, Volume I — Radio Navigation Aids</i> (Attachment M refers)		

	<i>Reference/ Paragraph No.</i>	<i>Comments</i>
Amendment to Annex 10 — <i>Aeronautical Telecommunications</i> , Volume II — <i>Communication Procedures including those with PANS status</i> (Attachment N refers)		
Amendment to Annex 11 — <i>Air Traffic Services</i> (Attachment O refers)		
Amendment to Annex 14 — <i>Aerodromes</i> , Volume I — <i>Aerodrome Design and Operations</i> (Attachment P refers)		
Amendment to Annex 14 — <i>Aerodromes</i> , Volume II — <i>Heliports</i> (Attachment Q refers)		
Amendment to the <i>Procedures for Air Navigation Services — Air Traffic Management</i> (PANS-ATM, Doc 4444) (Attachment R refers)		
Amendment to the <i>Procedures for Air Navigation Services — Aircraft Operations</i> , Volume I — <i>Flight Procedures</i> (PANS-OPS, Doc 8168) (Attachment S refers)		
Amendment to the <i>Procedures for Air Navigation Services — Aircraft Operations</i> , Volume II — <i>Construction of Visual and Instrument Flight Procedures</i> (PANS-OPS, Doc 8168) (Attachment T refers)		
Amendment to the <i>Procedures for Air Navigation Services — ICAO Abbreviations and Codes</i> PANS-ABC (Doc 8400) (Attachment U refers)		
Amendment to the <i>Procedures for Air Navigation Services (PANS) – Aerodromes</i> (PANS-Aerodromes, Doc 9981) (Attachment V refers)		

**International Standards and
Recommended Practices**

Annex 15
to the Convention on
International Civil Aviation

Aeronautical Information Services

For information regarding the applicability
of the Standards and Recommended Practices,
see Foreword.

Sixteenth Edition
DRAFT 1 – 2015-10-22

AIS – AIM Study Group

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INTERNATIONAL STANDARDS AND RECOMMENDED PRACTICES

CHAPTER 1. GENERAL

Note 1.— The object of the aeronautical information service (AIS) is to ensure the flow of aeronautical data and aeronautical information necessary for global air traffic management (ATM) system safety, regularity, economy and efficiency in an environmentally sustainable manner. The role and importance of aeronautical data and aeronautical information changed significantly with the implementation of area navigation (RNAV), performance-based navigation (PBN), airborne computer-based navigation systems, performance-based communication (PBC), performance-based surveillance (PBS), data link systems and satellite voice communications (SATVOICE). Corrupt, erroneous, late, or missing aeronautical data and aeronautical information can potentially affect the safety of air navigation.

Note 2.— These Standards and Recommended Practices are to be used in conjunction with the Procedures for Air Navigation Services — ICAO Abbreviations and Codes (PANS-ABC, Doc 8400).

Note 3.— These Standards and Recommended Practices are to be used in conjunction with the Procedures for Air Navigation Services — Aeronautical Information Management (PANS-AIM, Doc 10066).

Note 4.— Guidance material on the organization and operation of aeronautical information services is contained in the Aeronautical Information Services Manual (Doc 8126).

1.1 Definitions

When the following terms are used in the Standards and Recommended Practices for aeronautical information services, they have the following meanings:

Aerodrome. A defined area on land or water (including any buildings, installations and equipment) intended to be used either wholly or in part for the arrival, departure and surface movement of aircraft.

Aerodrome mapping data (AMD). Data collected for the purpose of compiling aerodrome mapping information.

Note.— Aerodrome mapping data are collected for purposes that include the improvement of the user's situational awareness, surface navigation operations, training, charting and planning.

Aerodrome mapping database (AMDB). A collection of aerodrome mapping data organized and arranged as a structured data set.

Aeronautical chart. A representation of a portion of the Earth, its culture and relief, specifically designated to meet the requirements of air navigation.

Aeronautical data. A representation of aeronautical facts, concepts or instructions in a formalized manner suitable for

communication, interpretation or processing.

Aeronautical information. Information resulting from the assembly, analysis and formatting of aeronautical data.

Aeronautical Information Circular (AIC). A notice containing information that does not qualify for the origination of a NOTAM or for inclusion in the AIP, but which relates to flight safety, air navigation, technical, administrative or legislative matters.

Aeronautical information management (AIM). The dynamic, integrated management of aeronautical information through the provision and exchange of quality-assured digital aeronautical data in collaboration with all parties.

Aeronautical Information Product. Aeronautical data and aeronautical information provided either as digital data sets or as a standardized presentation in paper or electronic media. Aeronautical Information Products include:

- Aeronautical Information Publication (AIP), including Amendments and Supplements;
- Aeronautical Information Circulars (AIC;)
- Aeronautical charts;
- NOTAM; and
- Digital data sets.

Note.— Aeronautical Information Products are intended primarily to satisfy international requirements for the exchange of aeronautical information.

Aeronautical Information Publication (AIP). A publication issued by or with the authority of a State and containing aeronautical information of a lasting character essential to air navigation.

Aeronautical information service (AIS). A service established within the defined area of coverage responsible for the provision of aeronautical data and aeronautical information necessary for the safety, regularity and efficiency of air navigation.

AIP Amendment. Permanent changes to the information contained in the AIP.

AIP Supplement. Temporary changes to the information contained in the AIP which are provided by means of special pages.

AIRAC. An acronym (aeronautical information regulation and control) signifying a system aimed at advance notification, based on common effective dates, of circumstances that necessitate significant changes in operating practices.

Air defence identification zone (ADIZ). Special designated airspace of defined dimensions within which aircraft are required to comply with special identification and/or reporting procedures additional to those related to the provision of air traffic services (ATS).

Air traffic management (ATM). The dynamic, integrated management of air traffic and airspace (including air traffic services, airspace management and air traffic flow management) — safely, economically and efficiently — through the provision of facilities and seamless services in collaboration with all parties and involving airborne and ground-based functions.

Application. Manipulation and processing of data in support of user requirements (ISO 19104*).

Area navigation (RNAV). A method of navigation which permits aircraft operation on any desired flight path within the coverage of ground- or space-based navigation aids or within the limits of the capability of self-contained aids, or a combination of these.

Note.— Area navigation includes performance-based navigation as well as other operations that do not meet the definition of performance-based navigation.

ASHTAM. A special series NOTAM notifying by means of a specific format change in activity of a volcano, a volcanic eruption and/or volcanic ash cloud that is of significance to aircraft operations.

Assemble. A process of merging data from multiple sources into a database and establishing a baseline for subsequent processing.

Note.— The assemble phase includes checking the data and ensuring that detected errors and omissions are rectified.

ATS surveillance service. Term used to indicate a service provided directly by means of an ATS surveillance system.

ATS surveillance system. A generic term meaning variously, ADS-B, PSR, SSR or any comparable ground-based system that enables the identification of aircraft.

Note.— A comparable ground-based system is one that has been demonstrated, by comparative assessment or other methodology, to have a level of safety and performance equal to or better than monopulse SSR.

Automatic dependent surveillance — broadcast (ADS-B). A means by which aircraft, aerodrome vehicles and other objects can automatically transmit and/or receive data such as identification, position and additional data, as appropriate, in a broadcast mode via a data link.

Automatic dependent surveillance — contract (ADS-C). A means by which the terms of an ADS-C agreement will be exchanged between the ground system and the aircraft, via a data link, specifying under what conditions ADS-C reports would be initiated, and what data would be contained in the reports.

Note.— The abbreviated term “ADS contract” is commonly used to refer to ADS event contract, ADS demand contract, ADS periodic contract or an emergency mode.

Automatic terminal information service (ATIS). The automatic provision of current, routine information to arriving and departing aircraft throughout 24 hours or a specified portion thereof:

Data link-automatic terminal information service (D-ATIS). The provision of ATIS via data link.

Voice-automatic terminal information service (Voice-ATIS). The provision of ATIS by means of continuous and repetitive voice broadcasts.

Bare Earth. Surface of the Earth including bodies of water and permanent ice and snow, and excluding vegetation and man-made objects.

Calendar. Discrete temporal reference system that provides the basis for defining temporal position to a resolution of one day (ISO 19108*).

Canopy. Bare Earth supplemented by vegetation height.

Confidence level. The probability that the true value of a parameter is within a certain interval around the estimate of its value.

Note.— The interval is usually referred to as the accuracy of the estimate.

Controller-pilot data link communications (CPDLC). A means of communication between controller and pilot, using data link for ATC communications.

Culture. All man-made features constructed on the surface of the Earth, such as cities, railways and canals.

Cyclic redundancy check (CRC). A mathematical algorithm applied to the digital expression of data that provides a level of assurance against loss or alteration of data.

Danger area. An airspace of defined dimensions within which activities dangerous to the flight of aircraft may exist at specified times.

Data accuracy. A degree of conformance between the estimated or measured value and the true value.

Data completeness. The degree of confidence that all of the data needed to support the intended use is provided.

Data format. A structure of data elements, records and files arranged to meet standards, specifications or data quality requirements.

Data integrity (assurance level). A degree of assurance that aeronautical data and its value has not been lost or altered since the origination or authorized amendment.

Data product. Data set or data set series that conforms to a data product specification (ISO 19131*).

Data product specification. Detailed description of a data set or data set series together with additional information that will enable it to be created, supplied to and used by another party (ISO 19131*).

Note.— A data product specification provides a description of the universe of discourse and a specification for mapping the universe of discourse to a data set. It may be used for production, sales, end-use or other purpose.

Data quality. A degree or level of confidence that the data provided meet the requirements of the data user in terms of accuracy, resolution, integrity (or equivalent assurance level), traceability, timeliness, completeness and format.

Data resolution. A number of units or digits to which a measured or calculated value is expressed and used.

Data set. Identifiable collection of data (ISO 19101*).

Data set series. Collection of data sets sharing the same product specification (ISO 19115*).

Data timeliness. The degree of confidence that the data is applicable to the period of its intended use.

Data traceability. The degree that a system or a data product can provide a record of the changes made to that product and thereby enable an audit trail to be followed from the end-user to the originator.

Datum. Any quantity or set of quantities that may serve as a reference or basis for the calculation of other quantities (ISO 19104*).

Digital Elevation Model (DEM). The representation of terrain surface by continuous elevation values at all intersections of a defined grid, referenced to common datum.

Note.— Digital Terrain Model (DTM) is sometimes referred to as DEM.

Direct transit arrangements. Special arrangements approved by the public authorities concerned by which traffic which is pausing briefly in its passage through the Contracting State may remain under their direct control.

Ellipsoid height (Geodetic height). The height related to the reference ellipsoid, measured along the ellipsoidal outer normal through the point in question.

Feature. Abstraction of real world phenomena (ISO 19101*).

Feature attribute. Characteristic of a feature (ISO 19101*).

Note.— A feature attribute has a name, a data type and a value domain associated with it.

Feature operation. Operation that every instance of a feature type may perform (ISO 19110*).

Note.— An operation upon the feature type dam is to raise the dam. The result of this operation is to raise the level of water in the reservoir.

Feature relationship. Relationship that links instances of one feature type with instances of the same or a different feature type (ISO 19101*).

Feature type. Class of real world phenomena with common properties (ISO 19110*).

Note.— In a feature catalogue, the basic level of classification is the feature type.

Geodesic distance. The shortest distance between any two points on a mathematically defined ellipsoidal surface.

Geodetic datum. A minimum set of parameters required to define location and orientation of the local reference system with respect to the global reference system/frame.

Geoid. The equipotential surface in the gravity field of the Earth which coincides with the undisturbed mean sea level (MSL) extended continuously through the continents.

Note.— The geoid is irregular in shape because of local gravitational disturbances (wind tides, salinity, current, etc.) and the direction of gravity is perpendicular to the geoid at every point.

Geoid undulation. The distance of the geoid above (positive) or below (negative) the mathematical reference ellipsoid.

Note.— In respect to the World Geodetic System — 1984 (WGS-84) defined ellipsoid, the difference between the WGS-84 ellipsoidal height and orthometric height represents WGS-84 geoid undulation.

Gregorian calendar. Calendar in general use; first introduced in 1582 to define a year that more closely approximates the tropical year than the Julian calendar (ISO 19108*).

Note.— In the Gregorian calendar, common years have 365 days and leap years 366 days divided into twelve sequential months.

Height. The vertical distance of a level, point or an object considered as a point, measured from a specific datum.

Heliport. An aerodrome or a defined area on a structure intended to be used wholly or in part for the arrival, departure and surface movement of helicopters.

Human Factors principles. Principles which apply to aeronautical design, certification, training, operations and

maintenance and which seek safe interface between the human and other system components by proper consideration to human performance.

Integrity classification (aeronautical data). Classification based upon the potential risk resulting from the use of corrupted data. Aeronautical data are classified as:

- a) *routine data*: there is a very low probability when using corrupted routine data that the continued safe flight and landing of an aircraft would be severely at risk with the potential for catastrophe;
- b) *essential data*: there is a low probability when using corrupted essential data that the continued safe flight and landing of an aircraft would be severely at risk with the potential for catastrophe; and
- c) *critical data*: there is a high probability when using corrupted critical data that the continued safe flight and landing of an aircraft would be severely at risk with the potential for catastrophe.

International airport. Any airport designated by the Contracting State in whose territory it is situated as an airport of entry and departure for international air traffic, where the formalities incident to customs, immigration, public health, animal and plant quarantine and similar procedures are carried out.

International NOTAM office (NOF). An office designated by a State for the exchange of NOTAM internationally.

Logon address. A specified code used for data link logon to an ATS unit.

Manoeuvring area. That part of an aerodrome to be used for the take-off, landing and taxiing of aircraft, excluding aprons.

Metadata. Data about data (ISO 19115*).

Note.— A structured description of the content, quality, condition or other characteristics of data.

Minimum en-route altitude (MEA). The altitude for an en-route segment that provides adequate reception of relevant navigation facilities and ATS communications, complies with the airspace structure and provides the required obstacle clearance.

Minimum obstacle clearance altitude (MOCA). The minimum altitude for a defined segment of flight that provides the required obstacle clearance.

Movement area. That part of an aerodrome to be used for the take-off, landing and taxiing of aircraft, consisting of the manoeuvring area and the apron.

Navigation specification. A set of aircraft and flight crew requirements needed to support performance-based navigation operations within a defined airspace. There are two kinds of navigation specifications:

Required navigation performance (RNP) specification. A navigation specification based on area navigation that includes the requirement for performance monitoring and alerting, designated by the prefix RNP, e.g. RNP 4, RNP APCH.

Area navigation (RNAV) specification. A navigation specification based on area navigation that does not include the requirement for performance monitoring and alerting, designated by the prefix RNAV, e.g. RNAV 5, RNAV 1.

Note 1.— *The Performance-based Navigation (PBN) Manual (Doc 9613), Volume II, contains detailed guidance on navigation specifications.*

Note 2.— *The term RNP, previously defined as “a statement of the navigation performance necessary for operation*

within a defined airspace”, has been removed from this Annex as the concept of RNP has been overtaken by the concept of PBN. The term RNP in this Annex is now solely used in the context of navigation specifications that require performance monitoring and alerting, e.g. RNP 4 refers to the aircraft and operating requirements, including a 4 NM lateral performance with on-board performance monitoring and alerting that are detailed in Doc 9613.

Next intended user. The entity that receives the aeronautical data or information from the Aeronautical Information Service.

NOTAM. A notice distributed by means of telecommunication containing information concerning the establishment, condition or change in any aeronautical facility, service, procedure or hazard, the timely knowledge of which is essential to personnel concerned with flight operations.

Obstacle. All fixed (whether temporary or permanent) and mobile objects, or parts thereof, that:

- a) are located on an area intended for the surface movement of aircraft; or
- b) extend above a defined surface intended to protect aircraft in flight; or
- c) stand outside those defined surfaces and that have been assessed as being a hazard to air navigation.

Obstacle/terrain data collection surface. A defined surface intended for the purpose of collecting obstacle/terrain data.

Origination (aeronautical data or aeronautical information). The creation of the value associated with new data or information or the modification of the value of an existing data or information.

Originator (aeronautical data or aeronautical information). An entity that is accountable for data or information origination and from which the AIS organisation receives aeronautical data and information.

Orthometric height. Height of a point related to the geoid, generally presented as an MSL elevation.

Performance-based communication (PBC). Communication based on performance specifications applied to the provision of air traffic services.

Note.— An RCP specification includes communication performance requirements that are allocated to system components in terms of the communication to be provided and associated transaction time, continuity, availability, integrity, safety and functionality needed for the proposed operation in the context of a particular airspace concept.

Performance-based navigation (PBN). Area navigation based on performance requirements for aircraft operating along an ATS route, on an instrument approach procedure or in a designated airspace.

Note.— Performance requirements are expressed in navigation specifications (RNAV specification, RNP specification) in terms of accuracy, integrity, continuity, availability and functionality needed for the proposed operation in the context of a particular airspace concept.

Performance-based surveillance (PBS). Surveillance based on performance specifications applied to the provision of air traffic services.

Note.— An RSP specification includes surveillance performance requirements that are allocated to system components in terms of the surveillance to be provided and associated data delivery time, continuity, availability, integrity, accuracy of the surveillance data, safety and functionality needed for the proposed operation in the context of a particular airspace concept.

Portrayal. Presentation of information to humans (ISO 19117*).

Position (geographical). Set of coordinates (latitude and longitude) referenced to the mathematical reference ellipsoid which define the position of a point on the surface of the Earth.

Post spacing. Angular or linear distance between two adjacent elevation points.

Precision. The smallest difference that can be reliably distinguished by a measurement process.

Note.— In reference to geodetic surveys, precision is a degree of refinement in performance of an operation or a degree of perfection in the instruments and methods used when taking measurements.

Pre-flight information bulletin (PIB). A presentation of current NOTAM information of operational significance, prepared prior to flight.

Prohibited area. An airspace of defined dimensions, above the land areas or territorial waters of a State, within which the flight of aircraft is prohibited.

Quality. Degree to which a set of inherent characteristics fulfils requirements (ISO 9000*).

Note 1.— The term “quality” can be used with adjectives such as poor, good or excellent.

Note 2.— “Inherent”, as opposed to “assigned”, means existing in something, especially as a permanent characteristic.

Quality assurance. Part of quality management focused on providing confidence that quality requirements will be fulfilled (ISO 9000*).

Quality control. Part of quality management focused on fulfilling quality requirements (ISO 9000*)

Quality management. Coordinated activities to direct and control an organization with regard to quality (ISO 9000*).

Radio navigation service. A service providing guidance information or position data for the efficient and safe operation of aircraft supported by one or more radio navigation aids.

Required communication performance (RCP) specification. A set of requirements for air traffic service provision and associated ground equipment, aircraft capability, and operations needed to support performance-based communication.

Required surveillance performance (RSP) specification. A set of requirements for air traffic service provision and associated ground equipment, aircraft capability, and operations needed to support performance-based surveillance.

Requirement. Need or expectation that is stated, generally implied or obligatory (ISO 9000*).

Note 1.— “Generally implied” means that it is custom or common practice for the organization, its customers and other interested parties, that the need or expectation under consideration is implied.

Note 2.— A qualifier can be used to denote a specific type of requirement, e.g. product requirement, quality management requirement, customer requirement.

Note 3.— A specified requirement is one which is stated, for example, in a document.

Note 4.— Requirements can be generated by different interested parties.

Restricted area. An airspace of defined dimensions, above the land areas or territorial waters of a State, within which the flight of aircraft is restricted in accordance with certain specified conditions.

Route stage. A route or portion of a route flown without an intermediate landing.

SNOWTAM. A special series NOTAM notifying the presence or removal of hazardous conditions due to snow, ice, slush or standing water associated with snow, slush and ice on the movement area, by means of a specific format.

Station declination. An alignment variation between the zero degree radial of a VOR and true north, determined at the time the VOR station is calibrated.

Terrain. The surface of the Earth containing naturally occurring features such as mountains, hills, ridges, valleys, bodies of water, permanent ice and snow, and excluding obstacles.

Note.— In practical terms, depending on the method of data collection used, terrain represents the continuous surface that exists at the bare Earth, the top of the canopy or something in-between, also known as “first reflective surface”.

Traceability. Ability to trace the history, application or location of that which is under consideration (ISO 9000*).

Note.— When considering product, traceability can relate to:

- the origin of materials and parts;*
- the processing history; and*
- the distribution and location of the product after delivery.*

Validation. Confirmation, through the provision of objective evidence, that the requirements for a specific intended use or application have been fulfilled (ISO 9000*).

Verification. Confirmation, through the provision of objective evidence, that specified requirements have been fulfilled (ISO 9000*).

Note 1.— The term “verified” is used to designate the corresponding status.

Note 2.— Confirmation can comprise activities such as:

- performing alternative calculations;*
- comparing a new design specification with a similar proven design specification;*
- undertaking tests and demonstrations; and*
- reviewing documents prior to issue.*

VOLMET. Meteorological information for aircraft in flight.

Data link-VOLMET (D-VOLMET). Provision of current aerodrome routine meteorological reports (METAR) and aerodrome special meteorological reports (SPECI), aerodrome forecasts (TAF), SIGMET, special air-reports not covered by a SIGMET and, where available, AIRMET via data link.

VOLMET broadcast. Provision, as appropriate, of current METAR, SPECI, TAF and SIGMET by means of continuous and repetitive voice broadcasts.

1.2 Common reference systems for air navigation

1.2.1 Horizontal reference system

1.2.1.1 World Geodetic System — 1984 (WGS-84) shall be used as the horizontal (geodetic) reference system for international air navigation. Consequently, published aeronautical geographical coordinates (indicating latitude and longitude) shall be expressed in terms of the WGS-84 geodetic reference datum.

Note.— *Comprehensive guidance material concerning WGS-84 is contained in the World Geodetic System — 1984 (WGS-84) Manual (Doc 9674).*

1.2.1.2 **Recommendation.**— *In precise geodetic applications and some air navigation applications, temporal changes in the tectonic plate motion and tidal effects on the Earth's crust should be modelled and estimated. To reflect the temporal effect, an epoch should be included with any set of absolute station coordinates.*

Note 1.— *The epoch of the WGS-84 (G873) reference frame is 1997.0 while the epoch of the latest updated WGS-84 (G1150) reference frame, which includes a plate motion model, is 2001.0. (G indicates that the coordinates were obtained through Global Positioning System (GPS) techniques, and the number following G indicates the GPS week when these coordinates were implemented in the United States' National Geospatial-Intelligence Agency's precise ephemeris estimation process.)*

Note 2.— *The set of geodetic coordinates of globally distributed permanent GPS tracking stations for the most recent realization of the WGS-84 reference frame (WGS-84 (G1150)) is provided in Doc 9674. For each permanent GPS tracking station, the accuracy of an individually estimated position in WGS-84 (G1150) has been in the order of 1 cm (1σ).*

Note 3.— *Another precise worldwide terrestrial coordinate system is the International Earth Rotation Service (IERS) Terrestrial Reference System (ITRS), and the realization of ITRS is the IERS Terrestrial Reference Frame (ITRF). Guidance material regarding the ITRS is provided in Appendix C of Doc 9674. The most current realization of WGS-84 (G1150) is referenced to the ITRF 2000 epoch. WGS-84 (G1150) is consistent with ITRF 2000 and in practical realization the difference between these two systems is in the one to two centimetre range worldwide, meaning WGS-84 (G1150) and ITRF 2000 are essentially identical.*

1.2.2 Vertical reference system

1.2.2.1 Mean sea level (MSL) datum shall be used as the vertical reference system for international air navigation.

Note 1.— *The geoid globally most closely approximates MSL. It is defined as the equipotential surface in the gravity field of the Earth which coincides with the undisturbed MSL extended continuously through the continents.*

Note 2.— *Gravity-related heights (elevations) are also referred to as orthometric heights while distances of points above the ellipsoid are referred to as ellipsoidal heights.*

1.2.2.2 The Earth Gravitational Model — 1996 (EGM-96) shall be used by international air navigation as the global gravity model.

1.2.3 Temporal reference system

1.2.3.1 The Gregorian calendar and Coordinated Universal Time (UTC) shall be used as the temporal reference system for international air navigation.

Note 1.— A value in the time domain is a temporal position measured relative to a temporal reference system.

Note 2.— UTC is a time scale maintained by the Bureau International de l'Heure and the IERS and forms the basis of a coordinated dissemination of standard frequencies and time signals.

Note 3.— See Attachment D of Annex 5 for guidance material relating to UTC.

Note 4.— ISO Standard 8601 specifies the use of the Gregorian calendar and 24-hour local or UTC for information interchange while ISO Standard 19108 prescribes the Gregorian calendar and UTC as the primary temporal reference system for use with geographic information.*

1.2.3.2 When a different temporal reference system is used for some applications, the feature catalogue, or the metadata associated with an application schema or a data set, as appropriate, shall include either a description of that system or a citation for a document that describes that temporal reference system.

Note.— ISO Standard 19108, Annex D, describes some aspects of calendars that may have to be considered in such a description.*

1.3 Miscellaneous specifications

1.3.1 Aeronautical Information Products intended for international distribution shall include English text for those parts expressed in plain language.

1.3.2 Place names shall be spelt in conformity with local usage, transliterated, when necessary, into the ISO-Basic Latin alphabet.

1.3.3 **Recommendation.**— *Units of measurement 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.*

1.3.4 ICAO abbreviations shall be used in the AIS whenever they are appropriate and their use will facilitate distribution of aeronautical data and aeronautical information.

* ISO Standard
8601 — Data elements and interchange formats — Information interchange — Representation of dates and times
9000 — Quality Management Systems — Fundamentals and Vocabulary
19101 — Geographic information — Reference model
19104 — Geographic information — Terminology
19108 — Geographic information — Temporal schema
19109 — Geographic information — Rules for application schema
19110 — Geographic information — Feature cataloguing schema
19115 — Geographic information — Metadata
19117 — Geographic information — Portrayal
19131 — Geographic information — Data product specification

CHAPTER 2. RESPONSIBILITIES AND FUNCTIONS

2.1 State responsibilities

2.1.1 Each Contracting State shall:

- a) provide an aeronautical information service (AIS); 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 and Recommended Practices of this Annex are adequately met.

2.1.2 Each Contracting State shall ensure that the provision of aeronautical data and aeronautical information covers its own territory and those areas over the high seas for which it is responsible for the provision of air traffic services.

2.1.3 The State concerned shall remain responsible for the aeronautical data and aeronautical information provided in accordance with 2.1.2. Aeronautical data and aeronautical information provided for and on behalf of a State shall clearly indicate that they are provided under the authority of that State, irrespective of the format in which they are provided.

2.1.4 Each Contracting State shall ensure that the aeronautical data and aeronautical information provided are complete, timely and of required quality in accordance with 3.2.

2.1.5 Each Contracting State 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.

Note.— The scope of aeronautical data and aeronautical information that would be the subject of formal arrangements is specified in Chapter 4.

2.2 AIS responsibilities and functions

2.2.1 An AIS shall ensure that aeronautical data and aeronautical information necessary for the safety, regularity or 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 air traffic services unit responsible for flight information service and the services responsible for pre-flight information.

Note.— A description of the ATM community is contained in the Global Air Traffic Management Operational Concept (Doc 9854).

2.2.2 An AIS shall receive, collate or assemble, edit, format, publish/store and distribute aeronautical data and aeronautical information concerning the entire territory of the State as well as those areas over the high seas in which the

State is responsible for the provision of air traffic services. Aeronautical data and aeronautical information shall be provided as Aeronautical Information Products.

Note.— An AIS may include origination functions.

2.2.3 Where 24-hour service is not provided, service shall be available during the whole period an aircraft is in flight in the area of responsibility of 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.

2.2.4 An AIS shall, in addition, obtain aeronautical data and aeronautical information to enable it to provide pre-flight information service and to meet the need for in-flight information:

- a) from the AIS of other States;
- b) from other sources that may be available.

Note.— One such source is the subject of a provision in 5.6.

2.2.5 Aeronautical data and aeronautical information obtained under 2.2.4 a) shall, when distributed, be clearly identified as having the authority of the originating State.

2.2.6 Aeronautical data and aeronautical information obtained under 2.2.4 b) shall, if possible, be verified before distribution and if not verified shall, when distributed, be clearly identified as such.

2.2.7 An AIS shall 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 2.2.1.

2.3 Exchange of aeronautical data and aeronautical information

2.3.1 Each Contracting State shall designate the office to which all elements of the Aeronautical Information Products provided by other States shall be addressed. Such an office shall be qualified to deal with requests for aeronautical data and aeronautical information provided by other States.

2.3.2 **Recommendation.**— *Formal arrangements should be established between those parties providing aeronautical data and aeronautical information on behalf of the States and their users in relation to the provision of the service.*

Note. — *Guidance material on such formal arrangements is contained in Doc 8126.*

2.3.3 Where more than one international NOTAM office is designated within a State, the extent of responsibility and the territory covered by each office shall be defined.

2.3.4 An AIS shall arrange, as necessary, to satisfy operational requirements for the issuance and receipt of NOTAM distributed by telecommunication.

2.3.5 Wherever practicable, direct contact between AIS shall be established in order to facilitate the international exchange of aeronautical data and aeronautical information.

2.3.6 Except as provided in 2.3.8, one copy of each of the following Aeronautical Information Products (where available) that have been requested by the AIS of a Contracting State shall be made available by the originating State and provided in the mutually-agreed form(s), without charge, even where authority for publication/storage and distribution has been delegated

to a non-governmental agency:

- a) Aeronautical Information Publication (AIP), including Amendments and Supplements
- b) Aeronautical Information Circulars (AIC)
- c) NOTAM

2.3.7 Recommendation.— *The exchange of more than one copy of the elements of the Aeronautical Information Products and other air navigation documents, including those containing air navigation legislation and regulations, should be subject to bilateral agreement between the participating Contracting States and entities.*

2.3.8 Where aeronautical information and aeronautical data is provided in the form of digital data sets to be used by the AIS, it shall be provided on the basis of agreement between the Contracting States concerned.

Note.— *The intention is that States are able to access foreign data for the purposes specified in 2.2.4.*

2.3.9 Recommendation.— *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 should be subject to separate agreement between the participating States and entities.*

2.3.10 Globally interoperable aeronautical information exchange models and data exchange models shall be used for the provision of data sets.

Note 1.— *Specifications concerning the globally interoperable aeronautical information and data exchange models are contained in the PANS-AIM (Doc 10066).*

Note 2.— *Guidance on the globally interoperable aeronautical information and data exchange models may be found in Doc 8126.*

2.4 Copyright

Note.— *In order to protect the investment in the products of a State's AIS as well as to ensure better control of their use, States may wish to apply copyright to those products in accordance with their national laws.*

2.4.1 Any Aeronautical Information Product which has been granted copyright protection by the originating State and provided to another State in accordance with 2.3 shall only be made available to a third party on the condition that the third party is made aware that the product is copyright protected and provided that it is appropriately annotated that the product is subject to copyright by the originating State.

2.4.2 When aeronautical information and aeronautical data is provided to a State in accordance with 2.3.8, the receiving State shall not provide digital data sets of the providing State to any third party without the consent of the providing State.

2.5 Cost recovery

2.5.1 Recommendation.— *The overhead cost of collecting and compiling aeronautical data and aeronautical information should 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).*

Note.— When costs of collection and compilation of aeronautical data and aeronautical information are recovered through airport and air navigation services charges, the charge to an individual customer for the supply of a particular Aeronautical Information Product may be based on the costs of printing paper copies, production of electronic media and distribution.

CHAPTER 3. AERONAUTICAL INFORMATION MANAGEMENT

3.1 Information management requirements

The information management resources and processes established by an aeronautical information service (AIS) 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.

3.2 Data quality specifications

3.2.1 Data Accuracy

The order of accuracy for aeronautical data shall be in accordance with its intended use.

Note.— Specifications concerning the order of accuracy (including confidence level) for aeronautical data are contained in the PANS-AIM (Doc 10066), Appendix 1.

3.2.2 Data Resolution

The order of resolution of aeronautical data shall be commensurate with the actual data accuracy.

Note 1.— Specifications concerning the resolution of aeronautical data are contained in the PANS-AIM (Doc 10066), Appendix 1.

Note 2.— The resolution of the data contained in the database may be the same or finer than the publication resolution.

3.2.3 Data Integrity

3.2.3.1 The integrity of aeronautical data shall be maintained throughout the data process from origination to distribution to the next intended user.

Note.— Specifications concerning the integrity classification related to aeronautical data are contained in the PANS-AIM (Doc 10066), Appendix 1.

3.2.3.2 Based on the applicable integrity classification, procedures shall be put in place in order to:

- a) for routine data: avoid corruption throughout the processing of the data;
- b) for essential data: assure corruption does not occur at any stage of the entire process and include additional processes as needed to address potential risks in the overall system architecture to further assure data integrity at this level; and

- c) for critical data: assure corruption does not occur at any stage of the entire process and include additional integrity assurance processes to fully mitigate the effects of faults identified by thorough analysis of the overall system architecture as potential data integrity risks.

3.2.4 Data Traceability

3.2.4.1 Traceability of aeronautical data shall be ensured and retained as long as the data is in use.

3.2.5 Data Timeliness

3.2.5.1 Timeliness shall be ensured by including limits on the effective period of the data elements.

Note 1.— These limits may be associated with individual data elements or data sets.

Note 2.— If the effective period is defined for a data set, it will account for the effective dates of all of the individual data elements.

3.2.6 Data Completeness

3.2.6.1 Completeness of the aeronautical data shall be ensured in order to support the intended use.

3.2.7 Data Format

3.2.7.1 The format of delivered data shall be adequate to ensure that the data is interpreted in a manner that is consistent with its intended use.

3.3 Aeronautical data and aeronautical information validation and verification

3.3.1 Material to be issued as part of an Aeronautical Information Product shall be thoroughly checked before it is submitted to the AIS, in order to ensure that all necessary information has been included and that it is correct in detail.

3.3.2 An AIS shall establish verification and validation procedures which ensure that upon receipt of aeronautical data and aeronautical information, quality requirements are met.

3.4 Data error detection

3.4.1 Digital data error detection techniques shall be used during the transmission and/or storage of aeronautical data and digital data sets.

3.4.2 Digital data error detection techniques shall apply to all integrity levels of data sets as specified in 3.2.3.

Note.— Detailed specifications concerning digital data error detection techniques are contained in the PANS-AIM (Doc 10066).

3.5 Use of automation

3.5.1 Automation shall be applied in order to ensure the timeliness, quality, efficiency and cost-effectiveness of aeronautical information services.

Note.— Guidance material on the development of databases and the establishment of data exchange services is contained in the Aeronautical Information Services Manual (Doc 8126).

3.5.2 In order to meet the data quality requirements, automation shall:

- a) enable digital aeronautical data exchange between the parties involved in the data processing chain; and
- b) use aeronautical information exchange models and data exchange models designed to be globally interoperable.

3.6 Quality management system

3.6.1 Quality management systems shall be implemented and maintained encompassing all functions of an AIS, as outlined in 2.2. The execution of such quality management systems shall be made demonstrable for each function stage.

Note.— Guidance material is contained in the Manual on the Quality Management System for Aeronautical Information Services (Doc 9839).

3.6.2 **Recommendation.**— *Quality management should be applicable to the whole aeronautical information data chain from data origination to distribution to the next intended user, taking into consideration the intended use of data.*

3.6.3 **Recommendation.**— *The quality management system established in accordance with 3.6.1 should follow the ISO 9000 series of quality assurance standards, and be certified by an accredited certification body.*

3.6.4 Within the context of the established quality management system, the competencies and the associated knowledge, skills and abilities required for each function shall be identified, and personnel assigned to perform those functions shall be appropriately trained. Processes shall be in place to ensure that personnel possess the competencies required to perform specific assigned functions. Appropriate records shall be maintained so that the qualifications of personnel can be confirmed. Initial and periodic assessments shall be established that require personnel to demonstrate the required competencies. Periodic assessments of personnel shall be used as a means to detect and correct shortfalls in knowledge, skills and abilities.

3.6.5 Each quality management system shall include the necessary policies, processes and procedures, including those for the use of metadata, to ensure and verify that aeronautical data is traceable throughout the aeronautical information data chain so as to allow any data anomalies or errors detected in use to be identified by root cause, corrected and communicated to affected users.

3.6.6 The established quality management system shall provide users with the necessary assurance and confidence that distributed aeronautical data and aeronautical information satisfy the aeronautical data quality requirements.

3.6.7 All necessary measures shall be taken to monitor compliance with the quality management system in place.

3.6.8 Demonstration of compliance of the quality management system applied shall be by audit. If nonconformity is identified, initiating action to correct its cause shall be determined and taken without undue delay. All audit observations and remedial actions shall be evidenced and properly documented.

3.7 Human factors considerations

3.7.1 The organization of an AIS as well as the design, contents, processing and distribution of aeronautical data and aeronautical information shall take into consideration human factors principles which facilitate their optimum utilization.

3.7.2 Due consideration shall be given to the integrity of information where human interaction is required and mitigating steps taken where risks are identified.

Note.— This may be accomplished through the design of systems, operating procedures or improvements in the operating environment.

CHAPTER 4. SCOPE OF AERONAUTICAL DATA AND AERONAUTICAL INFORMATION

Note 1.— The scope of aeronautical data and aeronautical information that is managed by an AIS is described in this chapter.

Note 2.— The scope of aeronautical data and aeronautical information provides the minimum requirement to support Aeronautical Information Products and services, aeronautical navigation data bases, air navigation applications and ATM systems.

4.1 Scope of aeronautical data and aeronautical information

4.1.1 The aeronautical data and aeronautical information to be received and managed by the AIS shall include at least the following sub-domains:

- a) national regulations, rules and procedures;
- b) aerodromes and heliports;
- c) airspace;
- d) ATS routes;
- e) instrument flight procedures;
- f) radio navigation aids/systems;
- g) obstacles; and
- h) geographic information.

Note 1. — Detailed specifications concerning the content of each sub-domain are contained in the PANS-AIM (Doc 10066), Appendix 1.

Note 2. — Aeronautical data and aeronautical information in each sub-domain may be originated by more than one organization or authority.

4.1.2 Determination and reporting of aeronautical data shall be in accordance with the accuracy and integrity classification required to meet the needs of the end-user of aeronautical data.

Note.— Specifications concerning the accuracy and integrity classification related to aeronautical data are contained in the PANS-AIM (Doc 10066), Appendix 1.

4.2 Metadata

4.2.1 Metadata shall be collected for aeronautical data processes and exchange points.

4.2.2 Metadata collection shall be applied throughout the aeronautical information data chain, from origination to distribution to the next intended user.

Note. — Detailed specifications concerning metadata are contained in the PANS-AIM (Doc 10066).

CHAPTER 5. AERONAUTICAL INFORMATION PRODUCTS AND SERVICES

5.1 General

5.1.1 Aeronautical information shall be provided in the form of Aeronautical Information Products and associated services.

Note.— Specifications concerning the order of resolution of aeronautical data provided for each Aeronautical Information Product are contained in the PANS-AIM (Doc 10066), Appendix 1.

5.1.2 Where aeronautical data and aeronautical information are provided in multiple formats, processes shall be implemented to ensure data and information consistency between formats.

5.2 Aeronautical information in a standardized presentation

5.2.1 Aeronautical information provided in a standardized presentation shall include the AIP, AIP Amendments, AIP Supplements, AICs, NOTAMs and Aeronautical Charts.

Note 1.— Detailed specifications about AIP, AIP Amendments, AIP Supplements, AICs and NOTAMs are contained in the PANS-AIM (Doc 10066).

Note 2. — Cases where digital data sets may replace the corresponding elements of the standardized presentation are detailed in the PANS-AIM (Doc 10066).

5.2.1.1 The AIP, AIP Amendment, AIP Supplement and AIC shall be provided on paper and/or as an electronic document.

5.2.1.2 **Recommendation.**— *The AIP, AIP Amendment, AIP Supplement and AIC provided as an electronic document (eAIP) should allow for both displaying on electronic devices and printing on paper.*

5.2.2 Aeronautical Information Publication (AIP)

Note 1.— AIP are intended primarily to satisfy international requirements for the exchange of aeronautical information of a lasting character essential to air navigation.

Note 2.— AIP constitute the basic information source for permanent information and long duration temporary changes.

5.2.2.1 AIP shall include:

- a) a statement 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 a State in each significant case where an alternative course of action is provided for in ICAO Standards, Recommended Practices and Procedures.

5.2.3 AIP Supplement

5.2.3.1 A checklist of valid AIP Supplements shall be regularly provided.

Note.— Detailed specifications concerning the frequency for providing checklists of valid AIP Supplements are contained in the PANS-AIM (Doc 10066).

5.2.4 Aeronautical Information Circulars (AIC)

5.2.4.1 An AIC shall be used to provide:

- a) a long-term forecast of any major change in legislation, regulations, procedures or facilities; or
- b) information of a purely explanatory or advisory nature liable to affect flight safety; or
- c) information or notification of an explanatory or advisory nature concerning technical, legislative or purely administrative matters.

5.2.4.2 An AIC shall not be used for information that qualifies for inclusion in AIP or NOTAM.

5.2.4.3 The validity of AIC currently in force shall be reviewed at least once a year.

5.2.4.4 A checklist of the currently valid AIC shall be regularly provided.

Note.— Detailed specifications concerning the frequency for providing checklists of valid AIC are contained in the PANS-AIM (Doc 10066).

5.2.5 Aeronautical Charts

Note.— Annex 4 provides Standards and Recommended Practices including provision requirements for each chart type.

5.2.5.1 The aeronautical charts listed alphabetically below shall, when made available for designated international aerodromes/heliports, form part of the AIP, or be provided separately to recipients of the AIP:

- a) Aerodrome/Heliport Chart — ICAO;
- b) Aerodrome Ground Movement Chart — ICAO;
- c) Aerodrome Obstacle Chart — ICAO Type A;
- d) Aerodrome Terrain and Obstacle Chart — ICAO (Electronic);
- e) Aircraft Parking/Docking Chart — ICAO;

- f) Area Chart — ICAO;
- g) ATC Surveillance Minimum Altitude Chart — ICAO;
- h) Instrument Approach Chart — ICAO;
- i) Precision Approach Terrain Chart — ICAO;
- j) Standard Arrival Chart — Instrument (STAR) — ICAO;
- k) Standard Departure Chart — Instrument (SID) — ICAO;
- l) Visual Approach Chart — ICAO.

Note.— A page pocket may be used in the AIP to include the Aerodrome Terrain and Obstacle Chart — ICAO (Electronic) on appropriate electronic media.

5.2.5.2 The “Enroute Chart — ICAO” shall, when available, form part of the AIP, or be provided separately to recipients of the AIP.

5.2.5.3 The aeronautical charts listed alphabetically below shall, when available, be provided as Aeronautical Information Products:

- a) Aerodrome Obstacle Chart — ICAO Type B;
- b) World Aeronautical Chart — ICAO 1:1 000 000;
- c) Aeronautical Chart — ICAO 1:500 000;
- d) Aeronautical Navigation Chart — ICAO Small Scale;
- e) Plotting Chart — ICAO chart; and
- f) ATC Surveillance Minimum Altitude Chart — ICAO.

5.2.5.4 **Recommendation.**— *Electronic aeronautical charts should be provided based on digital databases and the use of geographic information systems.*

5.2.5.5 The order of chart resolution of aeronautical data shall be that as specified for a particular chart.

Note.— Specifications concerning the order of chart resolution for aeronautical data are contained in the PANS-AIM (Doc 10066), Appendix 1.

5.2.6 NOTAM

Note.— Detailed specifications for NOTAM, including formats for SNOWTAM and ASHTAM, are contained in the PANS-AIM (Doc 10066).

5.2.6.1 A checklist of valid NOTAM shall be regularly provided.

Note.— Detailed specifications concerning the frequency for providing checklists of valid NOTAM are contained in the PANS-AIM (Doc 10066).

5.3 Digital data sets

5.3.1 General

5.3.1.1 When provided, digital data shall be in the form of the following data sets:

- a) AIP data set;
- b) terrain data sets;
- c) obstacle data sets;
- d) aerodrome mapping data sets; and
- e) instrument flight procedure data sets.

Note.— Detailed specifications concerning the content of the digital data sets are contained in the PANS-AIM (Doc 10066).

5.3.1.2 Each data set shall be provided to the next intended user together with a minimum set of metadata that ensures data traceability from the end-user to the originator.

Note.— Detailed specifications concerning metadata are contained in the PANS-AIM (Doc 10066).

5.3.1.3 A checklist of valid data sets shall be regularly provided.

5.3.2 AIP data set

5.3.2.1 **Recommendation.**— *An AIP data set should be provided covering the extent of information as provided in the AIP.*

5.3.2.2 **Recommendation.**— *When it is not possible to provide a complete AIP data set, the data subset(s) that are available should be provided.*

5.3.2.3 The AIP data set shall contain the digital representation of aeronautical information of lasting character (permanent information and long duration temporary changes) essential to air navigation.

5.3.3 Terrain and obstacle data sets

Note.— Numerical requirements for terrain and obstacle data sets are contained in the PANS-AIM (Doc 10066), Appendix 1 and 8.

5.3.3.1 The coverage areas for sets of terrain and obstacle data shall be specified as:

- Area 1: the entire territory of a State;
- Area 2: within the vicinity of an aerodrome, subdivided as follows;
- Area 2a: a rectangular area around a runway that comprises the runway strip plus any clearway that exists.

Note.— See Annex 14, Volume I, Chapter 3, for dimensions for runway strip.

— Area 2b: an area extending from the ends of Area 2a in the direction of departure, with a length of 10 km and a splay of 15 per cent to each side;

— Area 2c: an area extending outside Area 2a and Area 2b at a distance of not more than 10 km from the boundary of Area 2a; and

— Area 2d: an area outside the Areas 2a, 2b and 2c up to a distance of 45 km from the aerodrome reference point, or to an existing terminal control area (TMA) boundary, whichever is nearest;

— Area 3: the area bordering an aerodrome movement area that extends horizontally from the edge of a runway to 90 m from the runway centre line and 50 m from the edge of all other parts of the aerodrome movement area.

— Area 4: The area extending 900 m prior to the runway threshold and 60 m each side of the extended runway centre line in the direction of the approach on a precision approach runway, Category II or III.

5.3.3.2 Recommendation. — *Where the terrain at a distance greater than 900 m (3 000 ft) from the runway threshold is mountainous or otherwise significant, the length of Area 4 should be extended to a distance not exceeding 2 000 m (6 500 ft) from the runway threshold.*

5.3.3.3 Terrain data sets

5.3.3.3.1 Terrain data sets shall contain the digital representation of the terrain surface in the form of continuous elevation values at all intersections (points) of a defined grid, referenced to common datum.

5.3.3.3.2 Terrain data shall be provided for Area 1.

5.3.3.3.3 For aerodromes regularly used by international civil aviation, terrain data shall be provided for:

- a) Area 2a;
- b) the take-off flight path area; and
- c) an area bounded by the lateral extent of the aerodrome obstacle limitation surfaces.

5.3.3.3.4 Recommendation. — *For aerodromes regularly used by international civil aviation, additional terrain data should be provided within Area 2 as follows:*

- a) *in the area extending to 10 km from the ARP; and*
- b) *within the area between 10 km and the TMA boundary or 45-km radius (whichever is smaller) where terrain penetrates a horizontal terrain data collection surface specified as 120 m above the lowest runway elevation.*

5.3.3.3.5 Recommendation. — *Arrangements should be made for the coordination of providing terrain data for adjacent aerodromes where their respective coverage areas overlap to assure that the data for the same terrain are correct.*

5.3.3.3.6 Recommendation. — *For those aerodromes located near territorial boundaries, arrangements should be made among States concerned to share terrain data.*

5.3.3.3.7 Recommendation. — *For aerodromes regularly used by international civil aviation, terrain data should be provided for Area 3.*

5.3.3.3.8 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.

5.3.3.3.9 **Recommendation.**— *Where additional terrain data is collected to meet other aeronautical requirements, the terrain data sets should be expanded to include this additional data.*

5.3.3.4 Obstacle data sets

5.3.3.4.1 Obstacle data sets shall contain the digital representation of the vertical and horizontal extent of obstacles.

5.3.3.4.2 Obstacle data shall not be included in terrain data sets.

5.3.3.4.3 The obstacle data shall be provided for obstacles in Area 1 whose height is 100 m or higher above ground.

5.3.3.4.4 For aerodromes regularly used by international civil aviation, obstacle data shall be provided for all obstacles within Area 2 that are assessed as being a hazard to air navigation.

5.3.3.4.5 For aerodromes regularly used by international civil aviation, obstacle data shall be provided for:

- a) Area 2a for those obstacles that penetrate an obstacle data collection surface outlined by a rectangular area around a runway that comprises the runway strip plus any clearway that exists. The Area 2a obstacle collection surface shall have height of 3 m above the nearest runway elevation measured along the runway centre line, and for those portions related to a clearway, if one exists, at the elevation of the nearest runway end;
- b) objects in the take-off flight path area which project above a plane surface having a 1.2 per cent slope and having a common origin with the take-off flight path area; and
- c) penetrations of the aerodrome obstacle limitation surfaces.

Note.— *Take-off flight path areas are specified in Annex 4, 3.8.2. Aerodrome obstacle limitation surfaces are specified in Annex 14, Volume 1, Chapter 4.*

5.3.3.4.6 **Recommendation.**— *For aerodromes regularly used by international civil aviation, obstacle data should be provided for Areas 2b, 2c and 2d for obstacles that penetrate the relevant obstacle data collection surface specified as follows:*

- a) *Area 2b: an area extending from the ends of Area 2a in the direction of departure, with a length of 10 km and a splay of 15% to each side. The Area 2b obstacle collection surface has a 1.2% slope extending from the ends of Area 2a at the elevation of the runway end in the direction of departure, with a length of 10 km and a splay of 15% to each side;*
- b) *Area 2c: an area extending outside Area 2a and Area 2b at a distance of not more than 10 km from the boundary of Area 2a. The Area 2c obstacle collection surface has a 1.2% slope extending outside Area 2a and Area 2b at a distance of not more than 10 km from the boundary of Area 2a. The initial elevation of Area 2c shall be the elevation of the point of Area 2a at which it commences; and*
- c) *Area 2d: an area outside the Areas 2a, 2b and 2c up to a distance of 45 km from the aerodrome reference point, or to an existing TMA boundary, whichever is nearest. The Area 2d obstacle collection surface has a height of 100 m above ground;*

except that data need not be collected for obstacles less than a height of 3 m above ground in Area 2b and less than a height of 15 m above ground in Area 2c.

5.3.3.4.7 **Recommendation.**— Arrangements should be made for the coordination of providing obstacle data for adjacent aerodromes where their respective coverage areas overlap to assure that the data for the same obstacle are correct.

5.3.3.4.8 **Recommendation.**— For those aerodromes located near territorial boundaries, arrangements should be made among States concerned to share obstacle data.

5.3.3.4.9 **Recommendation.**— For aerodromes regularly used by international civil aviation, obstacle data should 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..

5.3.3.4.10 For aerodromes regularly used by international civil aviation, obstacle data shall be provided for Area 4 for all runways where precision approach Category II or III operations have been established.

5.3.3.4.11 **Recommendation.**— Where additional obstacle data are collected to meet other aeronautical requirements, the obstacle data sets should be expanded to include these additional data.

5.3.4 Aerodrome mapping data sets

5.3.4.1 Aerodrome mapping data sets shall contain the digital representation of aerodrome features.

Note— Aerodrome features consist of attributes and geometries, which are characterized as points, lines or polygons. Examples include runway thresholds, taxiway guidance lines and parking stand areas.

5.3.4.2 **Recommendation.**— Aerodrome mapping data sets should be made available for aerodromes regularly used by international civil aviation.

5.3.5 Instrument flight procedure data sets

5.3.5.1 Instrument flight procedure data sets shall contain the digital representation of instrument flight procedures.

5.3.5.2 **Recommendation.**— Instrument flight procedures data sets should be made available for aerodromes regularly used by international civil aviation.

5.4 Distribution services

5.4.1 General

5.4.1.1 Aeronautical Information Products shall be distributed to those users who request them.

5.4.1.2 AIP, AIP Amendments, AIP Supplements and AIC shall be made available by the most expeditious means.

5.4.1.3 **Recommendation.**— Global communication networks and Web services should, whenever practicable, be employed for the provision of Aeronautical Information Products.

5.4.2 NOTAM distribution

5.4.2.1 NOTAM shall be distributed on the basis of a request.

5.4.2.2 NOTAM shall be prepared in conformity with the relevant provisions of the ICAO communication procedures.

5.4.2.3 The Aeronautical Fixed Service (AFS) shall, whenever practicable, be employed for NOTAM distribution.

5.4.2.4 When a NOTAM is sent by means other than the AFS, a six-digit date-time group indicating the date and time of NOTAM origination, and the identification of the originator shall be used, preceding the text. The originating State shall select the NOTAM that are to be given international distribution.

5.4.2.5 International exchange of NOTAM shall take place only as mutually agreed between the international NOTAM offices concerned and between the NOTAM offices and multinational NOTAM Processing Units.

5.4.2.6 The originating State shall upon request grant distribution of NOTAM series other than those distributed internationally.

5.4.2.7 **Recommendation.**— *Selective distribution lists should be used when practicable.*

Note.— *Guidance material relating to selective distribution lists is contained in the Aeronautical Information Services Manual (Doc 8126).*

5.5 Pre-Flight Information Service

5.5.1 For any aerodrome/heliport used for international air operations, aeronautical information relative to the route stages originating at the aerodrome/heliport shall be made available to flight operations personnel, including flight crews and services responsible for pre-flight information.

5.5.2 Aeronautical information provided for pre-flight planning purposes shall include information of operational significance from the elements of the Aeronautical Information Products.

Note 1.— *The elements of the Aeronautical Information Products may be limited to national publications and when practicable, those of immediately adjacent States, provided a complete library of aeronautical information is available at a central location and means of direct communications are available with that library.*

Note 2.— *A recapitulation of valid NOTAM of operational significance and other information of urgent character may be made available to flight crews in the form of plain-language pre-flight information bulletins (PIB). Guidance material on the preparation of PIB is contained in the Aeronautical Information Services Manual (Doc 8126).*

5.6 Post-flight information Service

5.6.1 For any aerodrome/heliport used for international air operations, arrangements shall be made to receive information concerning the state and operation of air navigation facilities or services noted by aircrews.

5.6.2 The arrangements specified in 5.6.1 shall ensure that such information is made available to the aeronautical information service for distribution as the circumstances necessitate.

5.6.3 For any aerodrome/heliport used for international air operations, arrangements shall be made to receive information concerning the presence of wildlife hazard observed by aircrews.

5.6.4 The information about presence of wildlife hazard shall be made available to the aeronautical information service for distribution as the circumstances necessitate.

Note.— See Annex 14, Volume I, Chapter 9, Section 9.4.

CHAPTER 6. AERONAUTICAL INFORMATION UPDATES

6.1 General specifications

6.1.1 Aeronautical data and aeronautical information shall be kept up to date.

6.2 Aeronautical Information Regulation and Control (AIRAC)

6.2.1 Information concerning the following circumstances shall be distributed under the regulated system (AIRAC), i.e. basing establishment, withdrawal or significant changes upon a series of common effective dates at intervals of 28 days, including 8 January 2015:

a) Limits (horizontal and vertical), regulations and procedures applicable to:

- 1) flight information regions;
- 2) control areas;
- 3) control zones;
- 4) advisory areas;
- 5) ATS routes;
- 6) permanent danger, prohibited and restricted areas (including type and periods of activity when known) and ADIZ;
- 7) permanent areas or routes or portions thereof where the possibility of interception exists.

b) Positions, frequencies, call signs, identifiers, known irregularities and maintenance periods of radio navigation aids, and communication and surveillance facilities.

c) Holding and approach procedures, arrival and departure procedures, noise abatement procedures and any other pertinent ATS procedures.

d) Transition levels, transition altitudes and minimum sector altitudes.

e) Meteorological facilities (including broadcasts) and procedures.

f) Runways and stopways.

g) Taxiways and aprons.

h) Aerodrome ground operating procedures (including low visibility procedures).

i) Approach and runway lighting.

j) Aerodrome operating minima if published by a State.

6.2.2 The information notified under the AIRAC system shall not be changed further for at least another 28 days after the effective date, unless the circumstance notified is of a temporary nature and would not persist for the full period.

6.2.3 Information provided under the AIRAC system shall be made available by the AIS so as to reach recipients at least 28 days in advance of the AIRAC effective date.

Note. — AIRAC information is distributed by the AIS at least 42 days in advance of the AIRAC effective dates with the objective of reaching recipients at least 28 days in advance of the effective date.

6.2.4 When information has not been submitted by the AIRAC date, a NIL notification shall be distributed not later than one cycle before the AIRAC effective date concerned.

6.2.5 Implementation dates other than AIRAC effective dates shall not be used for pre-planned operationally significant changes requiring cartographic work and/or for updating of navigation databases.

6.2.6 **Recommendation.**— *The regulated system (AIRAC) should also be used for the provision of information relating to the establishment and withdrawal of, and premeditated significant changes in, the circumstances listed below:*

- a) *Position, height and lighting of navigational obstacles.*
- b) *Hours of service of aerodromes, facilities and services.*
- c) *Customs, immigration and health services.*
- d) *Temporary danger, prohibited and restricted areas and navigational hazards, military exercises and mass movements of aircraft.*
- e) *Temporary areas or routes or portions thereof where the possibility of interception exists.*

6.2.7 **Recommendation.**— *Whenever major changes are planned and where advance notice is desirable and practicable, information should be made available by the AIS so as to reach recipients at least 56 days in advance of the effective date. This should be applied to the establishment of, and premeditated major changes in, the circumstances listed below, and other major changes if deemed necessary.*

- a) *New aerodromes for international IFR operations.*
- b) *New runways for IFR operations at international aerodromes.*
- c) *Design and structure of the air traffic services route network.*
- d) *Design and structure of a set of terminal procedures (including change of procedure bearings due to magnetic variation change).*
- e) *Circumstances listed in 6.2.1 if the entire State or any significant portion thereof is affected or if cross-border coordination is required.*

Note. — Guidance material on what constitutes a major change is included in Doc 8126.

6.3 Aeronautical Information Product updates

6.3.1 AIP updates

6.3.1.1 AIP shall be amended or reissued at such regular intervals as may be necessary to keep them up to date.

6.3.1.2 Permanent changes to the AIP shall be published as AIP Amendments.

6.3.1.3 Temporary changes of long duration (three months or longer) and information of short duration which contains extensive text and/or graphics shall be published as AIP Supplements.

6.3.2 NOTAM

6.3.2.1 When an AIP Amendment or an AIP Supplement is published in accordance with AIRAC procedures, a “Trigger” NOTAM shall be originated.

Note.— Detailed specifications concerning the Trigger NOTAM are contained in the PANS-AIM (Doc 10066).

6.3.2.2 A NOTAM shall be originated and issued promptly whenever the information to be distributed is of a temporary nature and of short duration or when operationally significant permanent changes, or temporary changes of long duration are made at short notice, except for extensive text and/or graphics.

6.3.2.3 A NOTAM shall be originated and issued concerning the following information:

- a) establishment, closure or significant changes in operation of aerodrome(s) or heliport(s) or runways;
- b) establishment, withdrawal and significant changes in operation of aeronautical services (AGA, AIS, ATS, CNS, MET, SAR, etc.);
- c) establishment, withdrawal and significant changes in operational capability of radio navigation and air-ground communication services. This includes: interruption or return to operation, change of frequencies, change in notified hours of service, change of identification, change of orientation (directional aids), change of location, power increase or decrease amounting to 50 per cent or more, change in broadcast schedules or contents, or irregularity or unreliability of operation of any radio navigation and air-ground communication services or limitations of relay stations including operational impact, affected service, frequency and area;
- d) unavailability of back-up and secondary systems, having a direct operational impact;
- e) establishment, withdrawal or significant changes made to visual aids;
- f) interruption of or return to operation of major components of aerodrome lighting systems;
- g) establishment, withdrawal or significant changes made to procedures for air navigation services;
- h) occurrence or correction of major defects or impediments in the manoeuvring area;
- i) changes to and limitations on availability of fuel, oil and oxygen;
- j) major changes to search and rescue facilities and services available;

- k) establishment, withdrawal or return to operation of hazard beacons marking obstacles to air navigation;
- l) changes in regulations requiring immediate action, e.g. prohibited areas for SAR action;
- m) presence of hazards which affect air navigation (including obstacles, military exercises, displays, fireworks, sky lanterns, rocket debris, races and major parachuting events outside promulgated sites);
- n) planned laser emissions, laser displays and search lights if pilots' night vision is likely to be impaired;
- o) erecting or removal of, or changes to, obstacles to air navigation in the take-off/climb, missed approach, approach areas and runway strip;
- p) establishment or discontinuance (including activation or deactivation) as applicable, or changes in the status of prohibited, restricted or danger areas;
- q) establishment or discontinuance of areas or routes or portions thereof where the possibility of interception exists and where the maintenance of guard on the VHF emergency frequency 121.5 MHz is required;
- r) allocation, cancellation or change of location indicators;
- s) changes in aerodrome/heliport rescue and fire fighting category provided (see Annex 14, Volume I, Chapter 9, and Attachment A, Section 17);
- t) presence or removal of, or significant changes in, hazardous conditions due to snow, slush, ice, radioactive material, toxic chemicals, volcanic ash deposition or water on the movement area;
- u) outbreaks of epidemics necessitating changes in notified requirements for inoculations and quarantine measures;
- v) forecasts of solar cosmic radiation, where provided;
- w) an operationally significant change in volcanic activity, the location, date and time of volcanic eruptions and/or horizontal and vertical extent of volcanic ash cloud, including direction of movement, flight levels and routes or portions of routes which could be affected;
- x) release into the atmosphere of radioactive materials or toxic chemicals following a nuclear or chemical incident, the location, date and time of the incident, the flight levels and routes or portions thereof which could be affected and the direction of movement;
- y) establishment of operations of humanitarian relief missions, such as those undertaken under the auspices of the United Nations, together with procedures and/or limitations which affect air navigation;
- z) implementation of short-term contingency measures in cases of disruption, or partial disruption, of air traffic services and related supporting services; and
- aa) specific loss of satellite based navigation systems integrity.

Note.— See Annex 11, 2.31 and Attachment C to that Annex.

6.3.2.4 The following information shall not be notified by NOTAM:

- a) routine maintenance work on aprons and taxiways which does not affect the safe movement of aircraft;

- b) runway marking work, when aircraft operations can safely be conducted on other available runways, or the equipment used can be removed when necessary;
- c) temporary obstructions in the vicinity of aerodromes/heliports that do not affect the safe operation of aircraft;
- d) partial failure of aerodrome/heliport lighting facilities where such failure does not directly affect aircraft operations;
- e) partial temporary failure of air-ground communications when suitable alternative frequencies are known to be available and are operative;
- f) the lack of apron marshalling services and road traffic control;
- g) the unserviceability of location, destination or other instruction signs on the aerodrome movement area;
- h) parachuting when in uncontrolled airspace under VFR (see 5.1.1.1 l)), when controlled, at promulgated sites or within danger or prohibited areas;
- i) training activities by ground units;
- j) unavailability of back-up and secondary systems if these do not have an operational impact;
- k) limitations to airport facilities or general services with no operational impact;
- l) national regulations not affecting general aviation;
- m) announcement or warnings about possible/potential limitations, without any operational impact;
- n) general reminders on already published information;
- o) availability of equipment for ground units without containing information on the operational impact for airspace and facility users;
- p) information about laser emissions without any operational impact and fireworks below minimum flying heights;
- q) closure of movement area parts in connection with planned work locally coordinated of duration of less than one hour;
- r) closure, changes, unavailability in operation of aerodrome(s)/heliport(s) other than aerodrome(s)/heliport(s) operation hours.
- s) other non-operational information of a similar temporary nature.

Note.— Information which relates to an aerodrome and its vicinity and does not affect its operational status may be distributed locally during pre-flight or in-flight briefing or other local contact with flight crew members.

6.3.3 Data set updates

6.3.3.1 Data sets shall be amended or reissued at such regular intervals as may be necessary to keep them up to date.

6.3.3.2 Permanent changes and temporary changes of long duration (three months or longer) made available as digital data shall be issued in the form of a complete data set or a sub-set that includes only the differences from the previously issued complete data set.

6.3.3.3 **Recommendation.**— *When made available as a completely re-issued data set, the differences from the previously issued complete data set should be indicated.*

6.3.3.4 **Recommendation.**— *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.*

6.3.3.5 Updates to AIP, AIP data sets and Instrument Flight Procedures data sets shall be synchronised.

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Aeronautical Information Management

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AMENDMENTS

Amendments are announced in the supplements to the *Products and Services Catalogue*; the Catalogue and its supplements are available on the ICAO website at www.icao.int. The space below is provided to keep a record of such amendments.

RECORD OF AMENDMENTS AND CORRIGENDA

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FOREWORD

1. HISTORICAL BACKGROUND

1.1 The Air Navigation Commission, at the eleventh meeting of its 177th Session on 20 March 2008, agreed to the establishment of an Aeronautical Information Services to Aeronautical Information Management (AIS-AIM) study group in order to assist the Secretariat with the development of:

- a) a global strategy/roadmap for the transition from Aeronautical Information Services (AIS) to Aeronautical Information Management (AIM);
- b) Standards and Recommended Practices (SARPs) and guidance material related to the provision of a standard aeronautical information conceptual model and standard aeronautical information exchange model to enable the global exchange of data in digital format; and
- c) other SARPs, guidance material and training material necessary to support AIM implementation.

1.2 Following an assessment of Annex 15 — *Aeronautical Information Services* and the *Aeronautical Information Services Manual* (Doc 8126), it was proposed by the study group and accepted by the Air Navigation Commission that specifications published as Procedures for Air Navigation Services (PANS) would provide a more appropriate means for increased standardization and harmonisation within the domain of AIS/AIM as well as provide a vehicle for the emerging technical requirements of AIM. Consequently, the study group proceeded with development of the PANS-AIM using material currently contained in Annex 15 and Doc 8126.

1.3 The *Procedures for Air Navigation Services — Aeronautical Information Management* (PANS-AIM) contains several provisions in support to the transition from the product-based Aeronautical Information Services (AIS) to the data centric Aeronautical Information Management (AIM). This edition includes detailed requirements for the collection, management and provision of aeronautical data and aeronautical information as well as Aeronautical Information Products and services specifications.

2. SCOPE AND PURPOSE

2.1 The *Procedures for Air Navigation Services — Aeronautical Information Management* (PANS-AIM) are complementary to the Standards and Recommended Practices contained in Annex 15 — *Aeronautical Information Services* and Annex 4 — *Aeronautical Charts*. They are supplemented when necessary by regional procedures contained in the *Regional Supplementary Procedures* (Doc 7030).

Note 1.— Although the provisions and procedures are mainly directed to States (including AIS), data originators, commercial data houses of aeronautical data and aeronautical information and users should be familiar with the procedures contained in this document.

Note 2. — One of the objectives of AIM is to ensure integrity of aeronautical data is maintained through the data process from survey/origination to distribution to the next intended user. The provisions and procedures in this document do not relieve the end users of aeronautical data and aeronautical information of their responsibility to ensure accuracy and integrity of aeronautical data and information received.

2.2 The PANS-AIM specify, in greater detail than the Standards and Recommended Practices, the actual procedures to be applied by aeronautical information management units in providing the various aeronautical information services to other States and aviation stakeholders.

2.3 The PANS-AIM include topics that are relevant to the provision of harmonized procedures in the AIS/AIM domain, provide a framework for the delivery of uniform aeronautical information services in future AIM environments as well as represent a vehicle for emerging technical requirements.

3. STATUS

3.1 The Procedures for Air Navigation Services (PANS) do not have the same status as the Standards and Recommended Practices. While the latter are adopted by Council in pursuance of Article 37 of the Convention on International Civil Aviation, subject to the full procedure of Article 90, the PANS are approved by the Council and recommended to Contracting States for worldwide application.

3.2 While the PANS may contain material which may eventually become Standards or Recommended Practices (SARPs) when it has reached the maturity and stability necessary for adoption as such, they may also comprise material prepared as an amplification of the basic principles in the corresponding SARPs, and designed particularly to assist the user in the application of those SARPs.

4. IMPLEMENTATION

The implementation of procedures is the responsibility of Contracting States; they are applied in actual operations only after, and in so far as, States have enforced them. However, with a view to facilitating their processing towards implementation by States, they have been prepared in language which will permit direct use by the air navigation community.

5. PUBLICATION OF DIFFERENCES

5.1 The PANS do not carry the status afforded to Standards adopted by the Council as Annexes to the Convention and, therefore, do not come within the obligation imposed by Article 38 of the Convention to notify differences in the event of non-implementation.

5.2 However, attention of States is drawn to the provision of Annex 15 related to the publication in their Aeronautical Information Publication of lists of significant differences between their procedures and the related ICAO procedures.

6. PROMULGATION OF INFORMATION

Information relating to the establishment and withdrawal of and changes to facilities, services and procedures affecting aircraft operations provided according to the Procedures specified in this document should be notified and take effect in accordance with Annex 15.

7. CONTENTS OF THE DOCUMENT

7.1 Chapter 1 — Definitions

Chapter 1 contains a list of terms and their technical meanings as used in this document.

7.2 Chapter 2 — Aeronautical Information Management

7.2.1 Chapter 2 describes the main aeronautical information management functions that include the collection, processing, quality control and distribution of data and information, as well as data integrity monitoring and assurance.

7.2.2 Appendix 1 (Aeronautical Data Catalogue) presents the scope of data and information that can be collected and maintained by an AIS organization. The Aeronautical Data Catalogue symbolizes the shift from product-centric to data

centric environments, is considered the point of reference for all provisions related to aeronautical data origination and publication and represents the common language for data originators and AIS organizations.

7.3 Chapter 3 — Quality Management

Chapter 3 focuses on the quality management aspect of AIM. It explains the general requirements of the quality management system related to AIM processes.

7.4 Chapter 4 — Aeronautical Data Requirements

7.4.1 Chapter 4 outlines the data origination requirements and how data shall be collected and transmitted to the AIS in accordance with accuracy requirements and integrity classification as specified in Appendix 1.

7.4.2 The chapter also deals with the minimum metadata requirements.

7.5 Chapter 5 — Aeronautical Information Products and Services

7.5.1 Chapter 5 outlines the specifications regarding the provision of Aeronautical Information Products (in printed or electronic form) and Services. This includes the Aeronautical Information Publication (AIP), AIP amendments and supplements and Aeronautical Information Circulars (AIC).

7.5.2 The chapter also provides general specifications on NOTAM, number and series allocation, NOTAM checklist and distribution. The chapter includes also specifications on pre-flight information services.

7.5.3 General provisions for digital data are also explained as well as specific details on the various data sets – AIP data sets, terrain and obstacle data sets, aerodrome mapping data sets and instrument flight procedure data sets.

7.5.4 Data element properties, sub-properties and descriptions and quality requirements (accuracy, resolution, integrity) are contained in Appendix 1.

7.5.5 Contents of the Aeronautical Information Publication are contained in Appendix 2.

7.5.6 Format and instructions for completion of NOTAM, SNOWTAM and ASHTAM are found in Appendices 3, 4 and 5, respectively.

7.5.7 Terrain and obstacle attributes provision requirements are detailed in Appendix 6.

7.5.8 Predetermined distribution of NOTAM is detailed in Appendix 7.

7.6 Chapter 6 — Aeronautical Information Updates

Chapter 6 details how to update Aeronautical Information Products and Services.

Table A. Amendments to the PANS-AIM

CHAPTER 1 - DEFINITIONS

When the following terms are used in the present document they have the following meanings:

Aerodrome. A defined area on land or water (including any buildings, installations and equipment) intended to be used either wholly or in part for the arrival, departure and surface movement of aircraft.

Aerodrome mapping data (AMD). Data collected for the purpose of compiling aerodrome mapping information.

Note.— Aerodrome mapping data are collected for purposes that include the improvement of the user's situational awareness, surface navigation operations, training, charting and planning.

Aerodrome mapping database (AMDB). A collection of aerodrome mapping data organized and arranged as a structured data set.

Aeronautical chart. A representation of a portion of the Earth, its culture and relief, specifically designated to meet the requirements of air navigation.

Aeronautical data. A representation of aeronautical facts, concepts or instructions in a formalized manner suitable for communication, interpretation or processing.

Aeronautical information. Information resulting from the assembly, analysis and formatting of aeronautical data.

Aeronautical Information Circular (AIC). A notice containing information that does not qualify for the origination of a NOTAM or for inclusion in the AIP, but which relates to flight safety, air navigation, technical, administrative or legislative matters.

Aeronautical information management (AIM). The dynamic, integrated management of aeronautical information through the provision and exchange of quality-assured digital aeronautical data in collaboration with all parties.

Aeronautical Information Product. Aeronautical data and aeronautical information provided either as digital data sets or as a standardized presentation in paper or electronic media. Aeronautical Information Products include:

- Aeronautical Information Publication (AIP), including Amendments and Supplements;
- Aeronautical Information Circulars (AIC);
- Aeronautical charts;
- NOTAM;
- Digital data sets.

Note.— Aeronautical Information Products are intended primarily to satisfy international requirements for the exchange of aeronautical information.

Aeronautical Information Publication (AIP). A publication issued by or with the authority of a State and containing aeronautical information of a lasting character essential to air navigation.

Aeronautical information service (AIS). A service established within the defined area of coverage responsible for the provision of aeronautical data and aeronautical information necessary for the safety, regularity and efficiency of air navigation.

AIP Amendment. Permanent changes to the information contained in the AIP.

AIP Supplement. Temporary changes to the information contained in the AIP which are provided by means of special pages.

AIRAC. An acronym (aeronautical information regulation and control) signifying a system aimed at advance notification, based on common effective dates, of circumstances that necessitate significant changes in operating practices.

Air defence identification zone (ADIZ). Special designated airspace of defined dimensions within which aircraft are required to comply with special identification and/or reporting procedures additional to those related to the provision of air traffic services (ATS).

Air traffic management (ATM). The dynamic, integrated management of air traffic and airspace (including air traffic services, airspace management and air traffic flow management) — safely, economically and efficiently — through the provision of facilities and seamless services in collaboration with all parties and involving airborne and ground-based functions.

Application. Manipulation and processing of data in support of user requirements (ISO 19104*).

Area navigation (RNAV). A method of navigation which permits aircraft operation on any desired flight path within the coverage of ground- or space-based navigation aids or within the limits of the capability of self-contained aids, or a combination of these.

Note.— Area navigation includes performance-based navigation as well as other operations that do not meet the definition of performance-based navigation.

ASHTAM. A special series NOTAM notifying by means of a specific format change in activity of a volcano, a volcanic eruption and/or volcanic ash cloud that is of significance to aircraft operations.

Assemble. A process of merging data from multiple sources into a database and establishing a baseline for subsequent processing.

Note.— The assemble phase includes checking the data and ensuring that detected errors and omissions are rectified.

ATS surveillance service. Term used to indicate a service provided directly by means of an ATS surveillance system.

ATS surveillance system. A generic term meaning variously, ADS-B, PSR, SSR or any comparable ground-based system that enables the identification of aircraft.

Note.— A comparable ground-based system is one that has been demonstrated, by comparative assessment or other methodology, to have a level of safety and performance equal to or better than monopulse SSR.

Automatic dependent surveillance — broadcast (ADS-B). A means by which aircraft, aerodrome vehicles and other objects can automatically transmit and/or receive data such as identification, position and additional data, as appropriate, in a broadcast mode via a data link.

Automatic dependent surveillance — contract (ADS-C). A means by which the terms of an ADS-C agreement will be exchanged between the ground system and the aircraft, via a data link, specifying under what conditions ADS-C reports would be initiated, and what data would be contained in the reports.

Note.— The abbreviated term “ADS contract” is commonly used to refer to ADS event contract, ADS demand contract, ADS periodic contract or an emergency mode.

Automatic terminal information service (ATIS). The automatic provision of current, routine information to arriving and departing aircraft throughout 24 hours or a specified portion thereof:

Data link-automatic terminal information service (D-ATIS). The provision of ATIS via data link.

Voice-automatic terminal information service (Voice-ATIS). The provision of ATIS by means of continuous and repetitive voice broadcasts.

Bare Earth. Surface of the Earth including bodies of water and permanent ice and snow, and excluding vegetation and man-made objects.

Calendar. Discrete temporal reference system that provides the basis for defining temporal position to a resolution of one day (ISO 19108*).

Canopy. Bare Earth supplemented by vegetation height.

Confidence level. The probability that the true value of a parameter is within a certain interval around the estimate of its value.

Note.— The interval is usually referred to as the accuracy of the estimate.

Controller-pilot data link communications (CPDLC). A means of communication between controller and pilot, using data link for ATC communications.

Culture. All man-made features constructed on the surface of the Earth, such as cities, railways and canals.

Cyclic redundancy check (CRC). A mathematical algorithm applied to the digital expression of data that provides a level of assurance against loss or alteration of data.

Danger area. An airspace of defined dimensions within which activities dangerous to the flight of aircraft may exist at specified times.

Data accuracy. A degree of conformance between the estimated or measured value and the true value.

Data completeness. The degree of confidence that all of the data needed to support the intended use is provided.

Data format. A structure of data elements, records and files arranged to meet standards, specifications or data quality requirements.

Data integrity (assurance level). A degree of assurance that an aeronautical data and its value has not been lost or altered since the origination or authorized amendment.

Data product. Data set or data set series that conforms to a data product specification (ISO 19131*).

Data product specification. Detailed description of a data set or data set series together with additional information that will enable it to be created, supplied to and used by another party (ISO 19131*).

Note.— A data product specification provides a description of the universe of discourse and a specification for mapping the universe of discourse to a data set. It may be used for production, sales, end-use or other purpose.

Data quality. A degree or level of confidence that the data provided meet the requirements of the data user in terms of accuracy, resolution, integrity (or equivalent assurance level), traceability, timeliness, completeness and format.

Data resolution. A number of units or digits to which a measured or calculated value is expressed and used.

Data timeliness. The degree of confidence that the data is applicable to the period of its intended use.

Data traceability. The degree that a system or a data product can provide a record of the changes made to that product and thereby enable an audit trail to be followed from the end-user to the originator.

Data set. Identifiable collection of data (ISO 19101*).

Data set series. Collection of data sets sharing the same product specification (ISO 19115*).

Datum. Any quantity or set of quantities that may serve as a reference or basis for the calculation of other quantities (ISO 19104*).

Digital Elevation Model (DEM). The representation of terrain surface by continuous elevation values at all intersections of a defined grid, referenced to common datum.

Note.— Digital Terrain Model (DTM) is sometimes referred to as DEM.

Direct transit arrangements. Special arrangements approved by the public authorities concerned by which traffic which is pausing briefly in its passage through the Contracting State may remain under their direct control.

Ellipsoid height (Geodetic height). The height related to the reference ellipsoid, measured along the ellipsoidal outer normal through the point in question.

Feature. Abstraction of real world phenomena (ISO 19101*).

Feature attribute. Characteristic of a feature (ISO 19101*).

Note.— A feature attribute has a name, a data type and a value domain associated with it.

Feature operation. Operation that every instance of a feature type may perform (ISO 19110*).

Note.— An operation upon the feature type dam is to raise the dam. The result of this operation is to raise the level of water in the reservoir.

Feature relationship. Relationship that links instances of one feature type with instances of the same or a different feature type (ISO 19101*).

Feature type. Class of real world phenomena with common properties (ISO 19110*).

Note.— In a feature catalogue, the basic level of classification is the feature type.

Geodesic distance. The shortest distance between any two points on a mathematically defined ellipsoidal surface.

Geodetic datum. A minimum set of parameters required to define location and orientation of the local reference system with respect to the global reference system/frame.

Geoid. The equipotential surface in the gravity field of the Earth which coincides with the undisturbed mean sea level (MSL) extended continuously through the continents.

Note.— The geoid is irregular in shape because of local gravitational disturbances (wind tides, salinity, current, etc.) and the direction of gravity is perpendicular to the geoid at every point.

Geoid undulation. The distance of the geoid above (positive) or below (negative) the mathematical reference ellipsoid.

Note.— In respect to the World Geodetic System — 1984 (WGS-84) defined ellipsoid, the difference between the WGS-84 ellipsoidal height and orthometric height represents WGS-84 geoid undulation.

Gregorian calendar. Calendar in general use; first introduced in 1582 to define a year that more closely approximates the tropical year than the Julian calendar (ISO 19108*).

Note.— In the Gregorian calendar, common years have 365 days and leap years 366 days divided into twelve sequential months.

Height. The vertical distance of a level, point or an object considered as a point, measured from a specific datum.

Heliport. An aerodrome or a defined area on a structure intended to be used wholly or in part for the arrival, departure and surface movement of helicopters.

Human Factors principles. Principles which apply to aeronautical design, certification, training, operations and maintenance and which seek safe interface between the human and other system components by proper consideration to human performance.

Integrity classification (aeronautical data). Classification based upon the potential risk resulting from the use of corrupted data. Aeronautical data are classified as:

- a) *routine data*: there is a very low probability when using corrupted routine data that the continued safe flight and landing of an aircraft would be severely at risk with the potential for catastrophe;
- b) *essential data*: there is a low probability when using corrupted essential data that the continued safe flight and landing of an aircraft would be severely at risk with the potential for catastrophe; and
- c) *critical data*: there is a high probability when using corrupted critical data that the continued safe flight and landing of an aircraft would be severely at risk with the potential for catastrophe.

International airport. Any airport designated by the Contracting State in whose territory it is situated as an airport of entry and departure for international air traffic, where the formalities incident to customs, immigration, public health, animal and plant quarantine and similar procedures are carried out.

International NOTAM office (NOF). An office designated by a State for the exchange of NOTAM internationally.

Logon address. A specified code used for data link logon to an ATS unit.

Manoeuvring area. That part of an aerodrome to be used for the take-off, landing and taxiing of aircraft, excluding aprons.

Metadata. Data about data (ISO 19115*).

Note.— A structured description of the content, quality, condition or other characteristics of data.

Minimum en-route altitude (MEA). The altitude for an en-route segment that provides adequate reception of relevant navigation facilities and ATS communications, complies with the airspace structure and provides the required obstacle clearance.

Minimum obstacle clearance altitude (MOCA). The minimum altitude for a defined segment of flight that provides the required obstacle clearance.

Movement area. That part of an aerodrome to be used for the take-off, landing and taxiing of aircraft, consisting of the manoeuvring area and the apron.

Navigation specification. A set of aircraft and flight crew requirements needed to support performance-based navigation operations within a defined airspace. There are two kinds of navigation specifications:

Required navigation performance (RNP) specification. A navigation specification based on area navigation that includes the requirement for performance monitoring and alerting, designated by the prefix RNP, e.g. RNP 4, RNP APCH.

Area navigation (RNAV) specification. A navigation specification based on area navigation that does not include the requirement for performance monitoring and alerting, designated by the prefix RNAV, e.g. RNAV 5, RNAV 1.

Note 1.— The Performance-based Navigation (PBN) Manual (Doc 9613), Volume II, contains detailed guidance on navigation specifications.

Note 2.— The term RNP, previously defined as “a statement of the navigation performance necessary for operation within a defined airspace”, has been removed from this Annex as the concept of RNP has been overtaken by the concept of PBN. The term RNP in this Annex is now solely used in the context of navigation specifications that require performance

monitoring and alerting, e.g. RNP 4 refers to the aircraft and operating requirements, including a 4 NM lateral performance with on-board performance monitoring and alerting that are detailed in Doc 9613.

Next intended user. The entity that receives the aeronautical data or information from the Aeronautical Information Service.

NOTAM. A notice distributed by means of telecommunication containing information concerning the establishment, condition or change in any aeronautical facility, service, procedure or hazard, the timely knowledge of which is essential to personnel concerned with flight operations.

Obstacle. All fixed (whether temporary or permanent) and mobile objects, or parts thereof, that:

- a) are located on an area intended for the surface movement of aircraft;
or
- b) extend above a defined surface intended to protect aircraft in flight; or
- c) stand outside those defined surfaces and that have been assessed as being a hazard to air navigation.

Obstacle/terrain data collection surface. A defined surface intended for the purpose of collecting obstacle/terrain data.

Origination (aeronautical data or aeronautical information). The creation of the value associated with new data or information or the modification of the value of an existing data or information.

Originator (aeronautical data or aeronautical information). An entity that is accountable for data or information origination and from which the AIS organisation receives aeronautical data and information.

Orthometric height. Height of a point related to the geoid, generally presented as an MSL elevation.

Performance-based communication (PBC). Communication based on performance specifications applied to the provision of air traffic services.

Note.— An RCP specification includes communication performance requirements that are allocated to system components in terms of the communication to be provided and associated transaction time, continuity, availability, integrity, safety and functionality needed for the proposed operation in the context of a particular airspace concept.

Performance-based navigation (PBN). Area navigation based on performance requirements for aircraft operating along an ATS route, on an instrument approach procedure or in a designated airspace.

Note.— Performance requirements are expressed in navigation specifications (RNAV specification, RNP specification) in terms of accuracy, integrity, continuity, availability and functionality needed for the proposed operation in the context of a particular airspace concept.

Performance-based surveillance (PBS). Surveillance based on performance specifications applied to the provision of air traffic services.

Note.— An RSP specification includes surveillance performance requirements that are allocated to system components in terms of the surveillance to be provided and associated data delivery time, continuity, availability, integrity, accuracy of the surveillance data, safety and functionality needed for the proposed operation in the context of a particular airspace concept.

Portrayal. Presentation of information to humans (ISO 19117*).

Position (geographical). Set of coordinates (latitude and longitude) referenced to the mathematical reference ellipsoid which define the position of a point on the surface of the Earth.

Post spacing. Angular or linear distance between two adjacent elevation points.

Precision. The smallest difference that can be reliably distinguished by a measurement process.

Note.— In reference to geodetic surveys, precision is a degree of refinement in performance of an operation or a degree of perfection in the instruments and methods used when taking measurements.

Pre-flight information bulletin (PIB). A presentation of current NOTAM information of operational significance, prepared prior to flight.

Prohibited area. An airspace of defined dimensions, above the land areas or territorial waters of a State, within which the flight of aircraft is prohibited.

Quality. Degree to which a set of inherent characteristics fulfils requirements (ISO 9000*).

Note 1.— The term “quality” can be used with adjectives such as poor, good or excellent.

Note 2.— “Inherent”, as opposed to “assigned”, means existing in something, especially as a permanent characteristic.

Quality assurance. Part of quality management focused on providing confidence that quality requirements will be fulfilled (ISO 9000*).

Quality control. Part of quality management focused on fulfilling quality requirements (ISO 9000*).

Quality management. Coordinated activities to direct and control an organization with regard to quality (ISO 9000*).

Radio navigation service. A service providing guidance information or position data for the efficient and safe operation of aircraft supported by one or more radio navigation aids.

Required communication performance (RCP) specification. A set of requirements for air traffic service provision and associated ground equipment, aircraft capability, and operations needed to support performance-based communication.

Required surveillance performance (RSP) specification. A set of requirements for air traffic service provision and associated ground equipment, aircraft capability, and operations needed to support performance-based surveillance.

Requirement. Need or expectation that is stated, generally implied or obligatory (ISO 9000*).

Note 1.— “Generally implied” means that it is custom or common practice for the organization, its customers and other interested parties, that the need or expectation under consideration is implied.

Note 2.— A qualifier can be used to denote a specific type of requirement, e.g. product requirement, quality management requirement, customer requirement.

Note 3.— A specified requirement is one which is stated, for example, in a document.

Note 4.— Requirements can be generated by different interested parties.

Restricted area. An airspace of defined dimensions, above the land areas or territorial waters of a State, within which the flight of aircraft is restricted in accordance with certain specified conditions.

Route stage. A route or portion of a route flown without an intermediate landing.

SNOWTAM. A special series NOTAM notifying the presence or removal of hazardous conditions due to snow, ice, slush or standing water associated with snow, slush and ice on the movement area, by means of a specific format.

Station declination. An alignment variation between the zero degree radial of a VOR and true north, determined at the time the VOR station is calibrated.

Terrain. The surface of the Earth containing naturally occurring features such as mountains, hills, ridges, valleys, bodies of water, permanent ice and snow, and excluding obstacles.

Note.— In practical terms, depending on the method of data collection used, terrain represents the continuous surface that exists at the bare Earth, the top of the canopy or something in-between, also known as “first reflective surface”.

Traceability. Ability to trace the history, application or location of that which is under consideration (ISO 9000*).

Note.— When considering product, traceability can relate to:

- *the origin of materials and parts;*
- *the processing history; and*
- *the distribution and location of the product after delivery.*

Validation. Confirmation, through the provision of objective evidence, that the requirements for a specific intended use or application have been fulfilled (ISO 9000*).

Verification. Confirmation, through the provision of objective evidence, that specified requirements have been fulfilled (ISO 9000*).

Note 1.— The term “verified” is used to designate the corresponding status.

Note 2.— Confirmation can comprise activities such as:

- *performing alternative calculations;*
- *comparing a new design specification with a similar proven design specification;*
- *undertaking tests and demonstrations; and*
- *reviewing documents prior to issue.*

VOLMET. Meteorological information for aircraft in flight.

Data link-VOLMET (D-VOLMET). Provision of current aerodrome routine meteorological reports (METAR) and aerodrome special meteorological reports (SPECI), aerodrome forecasts (TAF), SIGMET, special air-reports not covered by a SIGMET and, where available, AIRMET via data link.

VOLMET broadcast. Provision, as appropriate, of current METAR, SPECI, TAF and SIGMET by means of continuous and repetitive voice broadcasts.

CHAPTER 2. AERONAUTICAL INFORMATION MANAGEMENT

2.1 Information management requirements

Management of aeronautical data and aeronautical information shall include the following processes:

- collection
- processing
- quality control
- distribution

2.1.1 Collection

2.1.1.1 The identification of data originators, or the relevant entities responsible for delivering data to the AIS, shall be documented based on the scope of aeronautical data and aeronautical information to be collected.

2.1.1.2 A record of data originators should be maintained.

Note.— Metadata requirements in Chapter 4 specify which information is to be recorded for each originator.

2.1.1.3 Each data element to be collected should be mapped to an identified data originator, in accordance with the formal arrangements established between data originators and the AIS.

2.1.1.4 The list of aeronautical information subjects and their properties, as contained in Appendix 1, should be used to establish formal arrangements between the originators and the AIS.

2.1.1.5 Valid codes for the code lists of the aeronautical data properties and sub-properties should be defined in the formal arrangements between the originators and the AIS.

2.1.1.6 Appendix 1 shall be considered as a reference for aeronautical data and aeronautical information origination and publication requirements.

Note 1.— Appendix 1 presents the scope of data and information that can be collected and maintained by the AIS.

Note 2.— Appendix 1 provides a common language that can be used by data originators and the AIS.

2.1.2 Processing

2.1.2.1 Collected data shall be verified and validated for compliance with completeness, format, timeliness, traceability and data quality requirements.

Note 1.— Appendix 1 contains aeronautical data attributes, metadata, and accuracy requirements.

Note 2.— Guidance material on aeronautical data quality requirements (accuracy, resolution, integrity, and traceability and protection requirements) may be found in the World Geodetic System — 1984 (WGS-84) Manual (Doc 9674).

Note 3. —Supporting data quality material in respect of data accuracy, publication resolution, and integrity of aeronautical data, together with guidance material in respect to the rounding convention for aeronautical data, is contained

in Radio Technical Commission for Aeronautics (RTCA) Document DO-201A and European Organization for Civil Aviation Equipment (EUROCAE) Document ED-77 — Standards for Aeronautical Information (or equivalent).

Note 4.— Guidance material on the management of aeronautical data quality is included in the Manual on the Quality Management System for Aeronautical Information Services (Doc 9839).

Note 5.— Verification activities may include:

- a) comparison processes in which data and information are compared with an independent source;*
- b) feedback processes in which data and information are compared between their input and output state;*
- c) processing through multiple independent and different systems, comparing the output of each; this includes performing alternative calculations; and*
- d) processes in which data and information are compared to the originator's request.*

Note 6.— Validation activities may include:

- a) application processes in which data and information are tested;*
- b) processes in which data and information are compared between two different outputs; and*
- c) processes in which data and information are compared to an expected range, value or other business rules.*

2.1.2.2 Automation systems implemented for processing aeronautical data and aeronautical information should ensure traceability of the performed actions.

2.1.3. Quality control

Note.— Error-producing faults in the entire process may be mitigated by additional data quality assurance techniques as may be required. These could include application tests for critical data (for example, by flight check); the use of security, logic, semantic, comparison, and redundancy checks; digital error detection; and the qualification of human resources and process tools such as hardware and software.

2.1.3.1 Quality checks should be implemented to ensure compliance with product specifications contained in Chapter 5 of PANS-AIM.

2.1.3.2 When the same data is duplicated in different Aeronautical Information Products, coherency checks should be undertaken.

2.1.4 Distribution

(To be developed)

2.2 Data integrity monitoring and assurance

2.2.1 Data integrity should be assured by employing cryptographic technologies (e.g. hash functions, message authentication codes, asymmetric and symmetric encryption, and digital certificates).

Note.— Guidance material in respect to the processing of aeronautical data and aeronautical information is contained in RTCA Document DO-200B and European Organization for Civil Aviation Equipment (EUROCAE) Document ED-76A — Standards for Processing Aeronautical Data.

2.2.2 The technical means used for data error detection should be based on the use of systematic cycling codes.

Note.— The means to implement systematic cycling codes include the use of hash functions and cyclic redundancy check (CRC).

CHAPTER 3. QUALITY MANAGEMENT

3.1 Quality management system

3.1.1 This chapter provides general requirements on the quality management system related to AIM processes.

Note.— Detailed guidance can be found in the Manual on the Quality Management System for Aeronautical Information Management (Doc 9839).

3.1.2 The general requirements for a QMS shall be to:

- a) develop a quality manual that includes the scope of a quality management system as applied to AIM processes;
- b) identify the processes needed for the QMS;
- c) determine the sequence and interaction of these processes;
- d) determine criteria and methods required to ensure the effective operation and control of these processes;
- e) ensure the availability of information necessary to support the operation and monitoring of these processes;
- f) measure, monitor and analyse these processes, and implement action necessary to achieve planned results and continual improvement; and
- g) maintain appropriate records that are necessary to provide confidence of conformity of the processes and resulting product.

3.1.3 In the framework of the quality management system, a user feedback system shall be defined and implemented.

Note 1. — Quality management may be provided by a single quality management system or a series of quality management systems.

Note 2.— International Organization for Standardization (ISO) 9000 series of quality assurance standards provide a basic framework for the development of a quality assurance programme.

Note 3.— Formal arrangements concerning data quality between originator and distributor and between distributor and next intended user may be used to manage the aeronautical information data chain.

Note 4.— Guidance material concerning training methodology to ensure the competency of personnel is contained in the Aeronautical Information Management Training Development Manual (Doc 9991).

Chapter 4 - AERONAUTICAL DATA REQUIREMENTS

4.1 Data Origination Requirements

4.1.1 Data shall be collected and transmitted to the AIS in accordance with the accuracy requirements and integrity classification specified in Appendix 1.

4.1.2 Positional data shall be classified as: surveyed points (e.g. navigation aid positions, runway threshold), calculated points (mathematical calculations from the known surveyed points of points in space, fixes) or declared points (e.g. flight information region boundary points).

4.1.3 Geographical coordinates indicating latitude and longitude shall be determined and reported to the AIS in terms of the World Geodetic System — 1984 (WGS-84) geodetic reference datum.

4.1.4 Geographical coordinates that have been transformed into WGS-84 coordinates by mathematical means and whose accuracy of original field work does not meet the applicable requirements contained in Appendix 1 shall be identified.

4.1.5 At those geographical positions where the accuracy of EGM-96 does not meet the accuracy requirements for elevation and geoid undulation specified in Appendix 1, on the basis of EGM-96 data, regional, national or local geoid models containing high resolution (short wavelength) gravity field data shall be developed and used. When a geoid model other than the EGM-96 model is used, a description of the model used, including the parameters required for height transformation between the model and EGM-96, shall be provided in the Aeronautical Information Publication (AIP).

Note.— Specifications concerning the determination and reporting (accuracy of field work and data integrity) of elevation and geoid undulation at specific positions at aerodromes/heliports are given in Appendix 1.

4.1.6 In addition to elevation referenced to the MSL (geoid), for the specific surveyed ground positions, geoid undulation (referenced to the WGS-84 ellipsoid) for those positions specified in Appendix 2 shall also be published.

4.2 Metadata Requirements

4.2.1 The metadata to be collected shall include, as a minimum:

- a) the name of the organizations or entities performing any action of originating, transmitting or manipulating the data;
- b) the action performed; and
- c) the date and time the action was performed.

Note.— ISO Standard 19115 specifies requirements for geographic information metadata.

CHAPTER 5 - AERONAUTICAL INFORMATION PRODUCTS AND SERVICES

5.1 General

5.1.1 Aeronautical data shall be provided in accordance with the resolution requirements contained in Appendix 1.

5.1.2 Geographical coordinates whose accuracy does not meet the requirements specified in Appendix 1 shall be identified.

5.1.3 The identification of geographical coordinates whose accuracy does not meet the requirements may be made either with an annotation or by explicitly providing the actual accuracy value.

5.1.3.1 In Aeronautical Information Products that are distributed on paper, the identification should be done with an asterisk following the coordinate value concerned.

5.2 Aeronautical information in a standardized presentation

5.2.1 Aeronautical Information Publication (AIP)

5.2.1.1 Contents

5.2.1.1.1 The AIP shall contain concise, current information relating to, and arranged under, the subject headings listed in, Appendix 2. This facilitates both the locating of information under a specific heading and the storage/retrieval of the information using automated processing.

5.2.1.1.2 If no facilities or services are provided or no information is available for publication in respect of one of the categories of information specified in Appendix 2, an indication should be given as to which of these circumstances applies (e.g. “NIL” or “Not AVBL”).

5.2.1.1.3 When the AIP Data Set (as specified in 5.3.3.1) is provided, the following sections of the AIP may be left blank and a reference to the data set availability shall be provided:

1. *ENR 2.1 FIR, UIR, TMA*
2. *ENR 3.1 Lower ATS Routes*
3. *ENR 3.2 Upper ATS Routes*
4. *ENR 3.3 Area Navigation (RNAV) Routes*
5. *ENR 3.4 Helicopter Routes*
6. *ENR 3.5 Other Routes*
7. *ENR 3.6 En-route Holding*
8. *ENR 4.1 Radio navigation aids — en-route*
9. *ENR 4.4 Name-code designators for significant points*
10. *ENR 4.5 Aeronautical Ground Lights — En-route*
11. *ENR 5.1 Prohibited, Restricted and Danger Areas*
12. *ENR 5.2 Military exercise and training areas and air defence identification zone (ADIZ)*
13. *ENR 5.3.1 Other activities of a dangerous nature*
14. *ENR 5.5 Aerial sporting and recreational activities*
15. ***** AD 2.19 Radio navigation and landing aids*
16. ***** AD 3.18 Radio navigation and landing aids*

5.2.1.1.4 When the Obstacle Data Set (as specified in 5.3.3.2.2) is provided, the following sections of the AIP may be left blank and a reference to the data set availability shall be provided:

17. ENR 5.4 Air navigation obstacles
18. ***AD 2.10 Aerodrome obstacles
19. ***AD 3.10 Heliport obstacles

5.2.1.2 General Specification

5.2.1.2.1 The issuing State and publishing authority shall be clearly indicated.

5.2.1.2.2 When two or more States jointly provide an AIP, these States shall be clearly indicated.

5.2.1.2.3 Each AIP shall be self-contained and shall include a table of contents.

Note.— If it is necessary by reason of bulk or for convenience, to publish an AIP in two or more parts or volumes, each of them will indicate that the remainder of the information is to be found in the other part(s) or volume(s).

5.2.1.2.4 Each AIP shall not duplicate information within itself or from other sources.

5.2.1.2.5 An AIP shall be organised in three parts (GEN, ENR and AD), sections and sub-sections, 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 State provided that an adequate table of contents is included.

5.2.1.2.6 Each AIP shall be dated.

5.2.1.2.6.1 The date, consisting of the day, month (by name) and year, shall be the publication date or the effective date (AIRAC) of the information.

5.2.1.2.7 Charts, maps or diagrams shall be used, when appropriate, to complement or as a substitute for the tabulations or text of AIP.

Note.— Where appropriate, charts produced in conformity with Annex 4, may be used to fulfil this requirement. Guidance material as to the specifications of index maps and diagrams included in AIP is contained in the Aeronautical Information Services Manual (Doc 8126).

5.2.1.2.8 When listing locations, the city or town should 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.

5.2.1.2.9 The spelling of place names shall conform with local usage, transliterated where necessary into the ISO basic Latin alphabet.

5.2.1.2.10 In the indication of the geographical coordinates of a location:

- the latitude should be given first;
- symbols for degrees, minutes or seconds should be omitted;
- two digits should always be used in expressing values of less than 10 degrees of latitude; and
- three digits should always be used in expressing values of less than 100 degrees of longitude;
- the letters N, S, E, W to indicate the cardinal points of the compass to the latitude and longitude as appropriate.

5.2.1.2.11 When describing periods of activity, availability or operation, the applicable days and times shall be specified.

5.2.1.2.12 The units of measurement selected for use in the AIP, e.g. dimensions on aerodromes, distances, elevations or altitudes, should be consistently followed and should adhere to Annex 5.

5.2.1.2.13 Index maps and diagrams included in the AIP should comply with the following specifications:

- a) *Base map*: The base map should be an outline map of the area adapted from existing material with general details. Graticules, topography and other details should be as simple as possible. Political subdivisions should be shown and identified. It should be produced in one colour.
- b) *Sheet size and scale*: The overall dimensions should be 210 mm × 297 mm. If a larger map is required, it should be folded to conform to this size. A uniform scale should be used for all charts produced as a series and other charts where practicable.
- c) *Title and marginal notes*: The title should be shown on the top border and should be as short and simple as possible.
- d) *Colours*: The number of colours used should be kept to a minimum. If more than one colour is used, the colours should offer adequate contrast.
- e) *Symbols*: Symbols should conform, where practicable, to the ICAO Chart symbols shown in Annex 4, Appendix 2. The basic, general purpose symbols for AIP index maps are a filled circle ● and an empty circle ○. Except when the symbols used are self-explanatory, a legend should be provided. For details for which no ICAO symbol has been provided, any appropriate symbol may be chosen provided it does not conflict with an ICAO symbol.

5.2.1.3 Specifications for AIP Amendments

5.2.1.3.1 The AIP shall be amended or reissued at such regular intervals as necessary to ensure the information contained in the AIP is complete and up to date.

5.2.1.3.2 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.

5.2.1.3.3 When a State has established the regular interval or publication dates for its AIP Amendments, these intervals or publication dates shall be included in the AIP, Part 1 — General (GEN).

5.2.1.3.4 New or revised information contained in the AIP shall be identified.

5.2.1.3.5 Each AIP Amendment shall be allocated a serial number, which shall be consecutive.

5.2.1.3.6 Each AIP Amendment shall contain a publication date.

5.2.1.3.7 Each AIRAC AIP Amendment shall contain an effective date.

5.2.1.3.7.1 When an effective time other than 0000 UTC is used, the effective time shall also be indicated.

5.2.1.3.8 When an AIP Amendment is issued, it shall include references to the serial number of the AIP Supplement or NOTAM which have been incorporated into the amendment.

5.2.1.3.9 A brief indication of the subjects affected by the amendment shall be given on the AIP Amendment cover sheet.

5.2.1.3.10 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.

5.2.1.4 Specifications for AIP Supplements

Note.— 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. The purpose of an AIP Supplement is to bring to the attention of users both temporary changes of long duration (three months or longer) and information of short duration containing extensive text or graphics which affect one or more parts of the AIP.

5.2.1.4.1 Each AIP Supplement shall be allocated a serial number which shall be consecutive and based on the calendar year.

Note.— Guidance material on the use of AIP Supplements together with examples of such use is contained in Doc 8126.

5.2.1.4.2 Each AIP Supplement shall be provided on distinctive pages allowing for easy identification from the regular AIP content.

5.2.1.4.3 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.

5.2.1.4.4 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 at 5.2.5.3 and with distribution as for the AIP Supplements.

5.2.2 Aeronautical Information Circulars (AIC)

5.2.2.1 An AIC shall be provided whenever it is desirable to promulgate:

- a) forecasts of important changes in the air navigation procedures, services and facilities provided;
- b) forecasts of implementation of new navigational systems;
- c) significant information arising from aircraft accident/incident investigation which has a bearing on flight safety;
- d) information on regulations relating to the safeguarding of international civil aviation against acts of unlawful interference;
- e) advice on medical matters of special interest to pilots;
- f) warnings to pilots concerning the avoidance of physical hazards;
- g) effect of certain weather phenomena on aircraft operations;
- h) information on new hazards affecting aircraft handling techniques;
- i) regulations relating to the carriage of restricted articles by air;
- j) reference to the requirements of, and publication of changes in, national legislation;
- k) aircrew licensing arrangements;
- l) training of aviation personnel;
- m) application of, or exemption from, requirements in national legislation;
- n) advice on the use and maintenance of specific types of equipment;
- o) actual or planned availability of new or revised editions of aeronautical charts;
- p) carriage of communication equipment;

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- q) explanatory information relating to noise abatement;
 - r) selected airworthiness directives;
 - s) changes in NOTAM series or distribution, new editions of AIP or major changes in their contents, coverage or format;
 - t) advance information on the snow plan (see 5.2.2.2);
 - u) other information of a similar nature.

5.2.2.2 The snow plan issued under AD 1.2.2 of the AIP shall be supplemented by seasonal information, to be issued well in advance of the beginning of each winter — not less than one month before the normal onset of winter conditions — and shall contain information such as that listed below:

- a) a list of aerodromes/heliports where snow clearance is expected to be performed during the coming winter:
 - *1) in accordance with the runway and taxiway systems; or
 - *2) planned snow clearing, deviating from the runway system (length, width and number of runways, affected taxiways and aprons or portions thereof);
- *b) information concerning any centre designated to coordinate information on the current state of progress of clearance and on the current state of runways, taxiways and aprons;
- c) a division of the aerodromes/heliports into SNOWTAM distribution lists in order to avoid excessive NOTAM distribution;
- *d) an indication, as necessary, of minor changes to the standing snow plan;
- *e) a descriptive list of clearance equipment;
- *f) a listing of what will be considered as the minimum critical snow bank to be reported at each aerodrome/heliport at which reporting will commence.

5.2.2.3 The originating State shall select the AIC that are to be given international distribution.

5.2.2.4 States shall give AIC selected for international distribution the same distribution as for the AIP.

5.2.2.5 Distribution of AIC on a national basis is left to the discretion of the originating State concerned.

5.2.2.6 Each AIC shall be allocated a serial number which shall be consecutive and based on the calendar year.

Note.— 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.

5.2.2.7 In the event that AIC are provided in more than one series, each series shall be separately identified by a letter (A 2/02, B 4/02, etc.).

5.2.2.8 A checklist of AIC currently in force shall be issued at least once a year, with distribution as for the AIC.

5.2.2.9 A checklist of AIC provided internationally shall be included in the NOTAM checklist.

5.2.3 Printed products

5.2.3.1 Printed AIP

5.2.3.1.1 When the AIP is issued as a printed volume, it should be published in loose-leaf form unless the complete publication is reissued at frequent intervals.

5.2.3.1.2 Each AIP issued as a printed volume and each page of an AIP issued in loose-leaf form shall be so annotated as to indicate clearly:

- a) the identity of the Aeronautical Information Publication;
- b) the territory covered and subdivisions when necessary;
- c) the identification of the issuing State and producing organization (authority);
- d) page numbers/chart titles;

5.2.3.1.3 The issuing State or the joint issuing States shall be clearly indicated on the cover and in the table of contents.

5.2.3.1.4 The normal method of amendment of the printed volume AIP shall be by means of replacement sheets.

5.2.3.1.5 New or revised information shall be identified by an annotation against it in the margin. A thick black vertical line or, where the change incorporated covers one line only or a part of a line, a thick black horizontal arrow, is sufficient to identify the change.

5.2.3.1.6 Each AIP amendment page, including the cover sheet, shall contain a publication date and, when applicable, an effective date.

5.2.3.1.7 When the AIP is provided in more than one volume, each volume shall include:

- Preface
- Record of AIP Amendments
- Record of AIP Supplements
- Checklist of AIP pages
- List of current hand amendments

5.2.3.1.8 When the AIP is published as one volume, the above-mentioned subsections appear only in Part 1 — GEN and the annotation “not applicable” shall be entered against each of these subsections in Parts 2 and 3.

5.2.3.1.9 A system of page numbering adaptable to the addition or deletion of sheets should be adopted. The page number should include:

- an identification of the part of the AIP;
- the section; and
- subsection, as applicable;

thus creating a separate set of numbers for each subject (e.g. GEN 2.1-3, ENR 4.1-1 or AD 2.2-3).

5.2.3.1.10 A checklist giving the current date of each page in the AIP shall be reissued frequently to assist the user in maintaining a current publication.

5.2.3.1.11 The sheet size should be no larger than 210 × 297 mm, except that larger sheets may be used provided they are folded to the same size.

5.2.3.1.12 When a small number of charts are to be included and chart size is not larger than 210 mm × 297 mm or allows for folding to these dimensions, they should be contained in the AIP. If, on the other hand, there are many charts and they are frequently amended, it may be convenient to place them in a separate volume with a separate subscription service.

5.2.3.1.13 Maps and charts included in the AIP should be paginated in the same manner as other material.

5.2.3.1.14 AIP Supplement pages should be coloured in order to be conspicuous, preferably in yellow.

5.2.3.1.15 AIP Supplement pages should be kept as the first item in the AIP parts.

Note – As alternate to eliminate the need to continuously refer to the front of the AIP for the required information, the Supplements may be divided into specific parts (e.g. GEN, ENR, AD) for insertion in each AIP part, as necessary.

5.2.3.1.16 AIP Supplement pages shall be kept in the AIP as long as all or some of their contents remain valid.

5.2.3.1.17 Each AIP Supplement page shall show a publication date.

5.2.3.1.18 Each AIRAC AIP Supplement page shall show a publication date and an effective date.

5.2.3.2 Printed AIC

5.2.3.2.1 Differentiation and identification of AIC topics according to subjects using colour coding should be practised where the numbers of AIC in force are sufficient to make identification in this form necessary.

5.2.3.2.2 It is recommended that AIC be colour coded by subject where there are sufficient circulars in force to warrant such identification, e.g.:

- a) white — administrative;
- b) yellow — ATC;
- c) pink — safety;
- d) mauve — danger area map; and
- e) green — maps/charts.

5.2.4 Electronic AIP (eAIP)

Note 1.— This composite electronic document is named “Electronic AIP” (eAIP) and may be based on a format that allows for digital data exchange.

Note 2.— Guidance material for the production and provision of the eAIP is contained in Doc 8126.

5.2.4.1 When provided, the information content of the eAIP and the structure of chapters, sections and sub-sections shall follow the content and structure of the paper AIP. The eAIP shall include files that allow for printing a paper AIP.

5.2.4.2 New or revised information shall be identified either by an annotation against it in the margin or by a mechanism that allows comparing the new/revised information with the previous one.

5.2.4.3 When provided, the eAIP should be available on a physical distribution medium (CD, DVD, etc.) and/or online on the Internet.

Note.— Guidance material on the use of the Internet is contained in Guidelines on the Use of the Public Internet for Aeronautical Applications (Doc 9855).

5.2.5 NOTAM

5.2.5.1 General specifications

5.2.5.1.1 Except as otherwise provided in 5.2.5.1.5 and 5.2.5.1.6, each NOTAM shall contain the information in the order shown in the NOTAM Format in Appendix 3.

Note.— Detailed guidance material covering NOTAM, SNOWTAM, ASHTAM and pre-flight information bulletin (PIB) production is contained in Doc 8126.

5.2.5.1.2 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.

Note.— The ICAO NOTAM Code together with significations/uniform abbreviated phraseology, and ICAO Abbreviations are those contained in the Procedures for Air Navigation Services — ICAO Abbreviations and Codes (PANS-ABC, Doc 8400).

5.2.5.1.3 All NOTAM shall be issued in the English language.

Note.— If necessary for domestic users, NOTAM may additionally be issued in a national language.

5.2.5.1.4 Information concerning snow, slush, ice and standing water on aerodrome/heliport pavements, when reported by means of a SNOWTAM, shall contain the information in the order shown in the SNOWTAM Format in Appendix 4.

5.2.5.1.5 Information concerning an operationally significant change in volcanic activity, a 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.

5.2.5.1.6 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.

5.2.5.1.7 When a NOTAM is issued which cancels or replaces a previous NOTAM, the series and number of the previous NOTAM shall be indicated.

5.2.5.1.7.1 The series, location indicator and subject of both NOTAM shall be the same.

5.2.5.1.8 Only one NOTAM shall be cancelled or replaced by a NOTAM.

5.2.5.1.9 Each NOTAM shall deal with only one subject and one condition of the subject.

Note.— Guidance material concerning the combination of a subject and a condition of the subject in accordance with the NOTAM Selection Criteria is contained in Doc 8126.

5.2.5.1.10 Each NOTAM shall be as brief as possible and so compiled that its meaning is clear without the need to refer to another document.

5.2.5.1.11 Each NOTAM shall be transmitted as a single telecommunication message.

5.2.5.1.12 A NOTAM containing permanent or temporary information of long duration shall carry appropriate AIP or AIP Supplement references.

5.2.5.1.13 Location indicators included in the text of a NOTAM shall be those contained in *Location Indicators* (Doc 7910).

5.2.5.1.13.1 In no case shall a curtailed form of such indicators be used.

5.2.5.1.14 Where no ICAO location indicator is assigned to the 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.

5.2.5.2 NOTAM number and series allocation

5.2.5.2.1 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.

5.2.5.2.2 Letters S and T shall not be used to identify a NOTAM series.

5.2.5.2.3 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.

5.2.5.2.4 If NOTAM is issued in both English and a national language, the NOTAM series shall be organised so that the national language series are equivalent to the English language series in terms of content and numbering.

5.2.5.2.5 The content and geographical coverage of each NOTAM series shall be stated in detail in the AIP, GEN 3.

5.2.5.2.6 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 a calendar year.

5.2.5.3 NOTAM Checklist

5.2.5.3.1 A checklist of valid NOTAM shall be issued as a NOTAM checklist at intervals of not more than one month.

Note.— Omitting a NOTAM from the checklist does not cancel a NOTAM.

5.2.5.3.2 One NOTAM checklist shall be issued for each series.

5.2.5.3.3 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.

5.2.5.3.4 A NOTAM checklist shall have the same distribution as the actual message series to which they refer and shall be clearly identified as checklist.

5.3 Digital Data

5.3.1 General provisions

5.3.1.1 The ISO 19100 series of standards for geographic information shall be used as a reference framework.

Note.— This is intended to facilitate and support the use and exchange of digital data sets between data providers and data users.

5.3.1.2 A description of the 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).

Note 1.— ISO Standard 19131 outlines the specifications of geographic data products.

Note 2.— 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.

5.3.1.3 The aeronautical information model used should encompass the aeronautical data and aeronautical information to be exchanged.

5.3.1.4 The aeronautical information model used should:

- a) use the Unified Modelling Language (UML) to describe the aeronautical information features and their properties, associations and data types;
- b) include data value constraints and data verification rules;
- c) include provisions for metadata as specified in 5.3.2; and
- d) include a temporality model to enable capturing the evolution of the properties of an aeronautical information feature during its life cycle.

5.3.1.5 The aeronautical data exchange model used should:

- a) apply a commonly used data encoding format;
- b) cover all the classes, attributes, data types and associations of the aeronautical information model detailed in 5.3.1.4; and
- c) provide an extension mechanism by which groups of users can extend the properties of existing features and add new features which do not adversely affect global standardization.

Note 1.— The intent of using a commonly used data encoding format is to ensure interoperability of aeronautical data exchange between agencies and organizations involved in the data processing chain.

Note 2.— Examples of commonly used data encoding formats include Extensible Markup Language (XML), Geography Markup Language (GML), and JavaScript Object Notation (JSON).

5.3.2 Metadata

5.3.2.1 Each data set shall include the following minimum set of metadata:

- a) the name of the organizations or entities providing the data set;
- b) the date and time when the data set was provided;
- c) validity of the data set; and
- d) any limitations with regard to the use of the data set.

5.3.3 Data sets

Note.— A data subject may appear in multiple data sets.

5.3.3.1 AIP data set

Note.— The purpose of the AIP data set is to support the initial 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 actually being used in digital format by service providers, ATC and IFR/VFR airspace users.

5.3.3.1.1 The AIP data set shall include data about the following subjects, with the properties indicated in brackets being included as a minimum (if applicable):

- a) ATS airspace (type, name, lateral limits, vertical limits, class of airspace);
- b) Special activity airspace (type, name, lateral limits, vertical limits, restriction, activation);
- c) Route (identifier prefix, flight rules, designator);
- d) Route segment (navigation specification, startpoint, endpoint, track, distance, upper limit, lower limit, MEA, MOCA, direction of cruising level, reverse direction of cruising level, required navigation performance);
- e) Waypoint – en-route (reporting requirement, identification, location, formation);
- f) Aerodrome/Heliport (location indicator, name, designator IATA, served city, certified ICAO, certification date, certification expiration date, control type, field elevation, reference temperature, magnetic variation, airport reference point);
- g) Runway (designator, nominal length, nominal width, surface type, strength);
- h) Runway Direction (designator, true bearing, threshold, TORA, TODA, ASDA, LDA, rejected TODA);
- i) FATO (designation, length, width, threshold point);
- j) TLOF (designator, centre point, length, width, surface type);
- k) Radio navigation aid (type, identification, name, aerodrome served, hours of operation, magnetic variation, frequency/channel, position, elevation, magnetic bearing, true bearing, zero bearing direction).

Note 1.— The description of the data subjects, their properties, data type and applicable data quality requirements is provided in Appendix 1).

Note 2.— The AIP data-set includes relevant AIP Amendment and SUP information.

5.3.3.1.2 When a property is not defined for a particular occurrence of the subjects listed in 5.3.3.1.1, the AIP data subset shall include an explicit “not applicable” indication.

5.3.3.2 Terrain and obstacle data sets

Note.— Terrain and obstacle data are intended to be used in the following air navigation applications:

- a) *ground proximity warning system with forward looking terrain avoidance function and minimum safe altitude warning (MSAW) system;*

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- b) *determination of contingency procedures for use in the event of an emergency during a missed approach or take-off;*
 - c) *aircraft operating limitations analysis;*
 - d) *instrument procedure design (including circling procedure);*
 - e) *determination of en-route “drift-down” procedure and en-route emergency landing location;*
 - f) *advanced surface movement guidance and control system (A-SMGCS); and*
 - g) *aeronautical chart production and on-board databases.*

The data may also be used in other applications such as flight simulator and synthetic vision systems, and may assist in determining the height restriction or removal of obstacles that pose a hazard to air navigation.

5.3.3.2.1 Terrain data set

5.3.3.2.1.1 A terrain grid shall be angular or linear and shall be of regular or irregular shape.

Note.— In regions of higher latitudes, latitude grid spacing may be adjusted to maintain a constant linear density of measurement points.

5.3.3.2.1.2 Sets of terrain data shall include spatial (position and elevation), thematic and temporal aspects for the surface of the Earth containing naturally occurring features such as mountains, hills, ridges, valleys, bodies of water, permanent ice and snow, and excluding obstacles. In practical terms, depending on the acquisition method used, this shall represent the continuous surface that exists at the bare Earth, the top of the canopy or something in-between, also known as “first reflective surface”.

5.3.3.2.1.3 In terrain data sets, only one feature type, i.e. terrain, shall be provided. Feature attributes describing terrain shall be those listed in Appendix 6, Table A6-1. The terrain feature attributes listed in Appendix 6, Table A6-1 represent the minimum set of terrain attributes, and those annotated as mandatory shall be recorded in the terrain data set.

5.3.3.2.1.4 Terrain data for each area shall conform to the applicable numerical requirements in Appendix 1.

5.3.3.2.2 Obstacle data set

5.3.3.2.2.1 Obstacle data elements are features that shall be represented in the data sets by points, lines or polygons.

5.3.3.2.2.2 In an obstacle data set, all defined obstacle feature types shall be provided and each of them shall be described according to the list of mandatory attributes provided in Appendix 6, Table A6-2.

Note.— By definition, obstacles can be fixed (permanent or temporary) or mobile. Specific attributes associated with mobile (feature operations) and temporary types of obstacles are annotated in Appendix 6, Table A6-2, as optional attributes. If these types of obstacles are to be provided in the data set, appropriate attributes describing such obstacles are also required.

5.3.3.2.2.3 Obstacle data for each area shall conform to the applicable numerical requirements contained in Appendix 1.

5.3.3.2.2.4 The obstacle data product specification, supported by geographical coordinates for each aerodrome included within the dataset, shall describe the following areas:

— Areas 2a, 2b, 2c, 2d;

-
- the take-off flight path area; and
 - the obstacle limitation surfaces.

Note.— Area 4 terrain data and Area 2 obstacle data are normally sufficient to support the production of the Precision Approach Terrain Chart — ICAO. When more detailed obstacle data are required for Area 4, these may be provided in accordance with the Area 4 obstacle data requirements specified in Appendix 6, Table A6-2. Guidance on appropriate obstacles for this chart is given in the Aeronautical Chart Manual (Doc 8697).

5.3.3.3 Aerodrome mapping data sets

Note 1.— Aerodrome mapping data include aerodrome geographic information that supports applications which improve the user's situational awareness or supplements surface navigation, thereby increasing safety margins and operational efficiency. Aerodrome mapping data sets with appropriate data element accuracy support requirements for collaborative decision making, common situational awareness, and aerodrome guidance applications are intended to be used, among others, in the following air navigation applications:

- a) position and route awareness including moving maps with own ship position, surface guidance and navigation (such as A-SMGCS);*
- b) traffic awareness including surveillance and runway incursion detection and alerting;*
- c) facilitation of aerodrome-related aeronautical information, including NOTAM;*
- d) resource and aerodrome facility management; and*
- e) aeronautical chart production.*

The data may also be used in other applications such as training/flight simulator and synthetic vision systems.

Note 2.— Aerodrome mapping data are organized and arranged in aerodrome mapping databases (AMDBs) for ease of electronic storage and usage by appropriate applications.

Note 3. — The exact content of the aerodrome mapping data sets is defined in EUROCAE ED99 / RTCA DO 272.

Note 4. — Metadata elements applicable to aerodrome mapping data are contained in RTCA Document DO-291B and European Organization for Civil Aviation Equipment (EUROCAE) Document ED-119B — Interchange Standards for Terrain, Obstacle, and Aerodrome Mapping Data.

5.3.3.3.1 Aerodrome mapping data — requirements for provision

5.3.3.3.1.1 Aerodrome mapping data should be supported by electronic terrain and obstacle data for Area 3 in order to ensure consistency and quality of all geographical data related to the aerodrome.

Note 1.— Accuracy and integrity requirements for aerodrome mapping data are contained in Appendix 1.

Note 2.— Electronic terrain and obstacle data pertaining to Area 3 and aerodrome mapping data may be originated using common acquisition techniques and managed within a single geographic information system (GIS).

Note 3.— The exact content of the aerodrome mapping data sets is defined in EUROCAE ED99 / RTCA DO 272.

5.3.3.3.2 Aerodrome mapping data product specification

5.3.3.3.2.1 *The ISO 19100 series of standards for geographic information shall be used as a reference framework.*

Note.— This is intended to facilitate and support the use and exchange of aerodrome mapping data between data providers and data users.

5.3.3.3.2.2 Aerodrome mapping data products shall be described following the ISO 19131 data product specification standard.

Note.— This includes an overview, specification scope, data product identification, data content and structure, reference system, data quality, data capture, data maintenance, data portrayal, data product delivery, additional information, and metadata.

5.3.3.3.3 Aerodrome mapping database — data set content and structure

5.3.3.3.3.1 The content and structure of aerodrome mapping data sets shall be defined in terms of an application schema and a feature catalogue.

Note.— ISO Standard 19109 contains rules for application schema while ISO Standard 19110 describes the feature cataloguing methodology for geographic information.

5.3.3.4 Instrument flight procedure design data set

Note.— The purpose of the instrument flight procedure data set is to support the initial 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 actually being used in digital format by service providers, ATC and IFR/VFR airspace users.

5.3.3.4.1 The Instrument flight procedure design data set shall include data about the following data subjects, with the properties indicated in brackets being included as a minimum (if applicable):

- a) Procedure (all properties);
- b) Procedure segment (all properties);
- c) Final approach segment (all properties);
- d) Procedure fix (all properties);
- e) Procedure holding (all properties).

f) Helicopter procedure (all properties)

Note 1.— The description of the data subjects, their properties, data type and applicable data quality requirements is provided in Appendix 1.

Note 2.— The Instrument Flight Procedure data set should also cover the data publication requirements contained in PANS-OPS, Doc 8168, Volume II.

5.4 Distribution Services

5.4.1 General

5.4.1.1 Distribution to the next intended user will differ in the delivery method applied which may either be:

- a) Physical distribution. The means by which aeronautical data and aeronautical information distribution is achieved through the delivery of a physical package, such as postal services; or
- b) 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.

5.4.1.2 Different delivery methods and data media may require different procedures to ensure the required data quality.

Note.— Further guidance on digital data set distribution can be found in the Manual on System Wide Information Management (SWIM) Concept (Doc 10039).

5.4.1.3. 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.

5.4.1.4 The checklist of data sets shall be made available through the same distribution mechanism as used for the data sets.

5.4.2 NOTAM distribution

5.4.2.1 An aeronautical information service shall arrange, as necessary, to satisfy operational requirements for the issuance and receipt of NOTAM distributed by telecommunication.

Note.— Arrangements may be made for direct exchange of SNOWTAM (see Appendix 4) between aerodromes/heliports.

5.4.2.2 The international exchange of ASHTAM (see 5.2.5.1.6), and NOTAM where States continue to use NOTAM for distribution of information on volcanic activity, shall include volcanic ash advisory centres and the centres designated by regional air navigation agreement for the operation of AFS Secure Aviation Data Information Service (SADIS) and the World Area Forecast System (WAFS) Internet file service (WIFS), and shall take account of the requirements of long-range operations.

5.4.2.3 The exchange of NOTAM between international NOTAM offices and between international NOTAM offices and multinational NOTAM Processing Units shall, as far as practicable, cover the needs of operations personnel including flight crew members.

5.4.2.4 A predetermined distribution system for NOTAM transmitted on the AFS in accordance with Annex 15, 6.3.2.3 shall be used whenever possible, subject to the requirements of 5.4.2.3.

5.4.2.5 The originating State shall upon request grant distribution of NOTAM series other than those distributed internationally.

5.5 Pre-flight information services

5.5.1 Geographic coverage for pre-flight information services should be determined and periodically reviewed. In general the coverage zone should be limited to the 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.

5.5.2 Although miscellaneous NOTAM is 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.

5.5.3 Automated pre-flight information systems shall be used to make aeronautical data and aeronautical information available to operations personnel including flight crew members for self-briefing, flight planning and flight information service purposes. The aeronautical data and aeronautical information made available shall comply with the provisions of Annex 15.

5.5.4 Self-briefing facilities of an automated pre-flight information system shall provide access to operations personnel, including flight crew members and other aeronautical personnel concerned, for consultation as necessary with the aeronautical information service by telephone or other suitable telecommunications means. The human/machine interface of such facilities shall ensure easy access in a guided manner to all relevant information/data.

5.5.5 Automated pre-flight information systems for the supply of aeronautical data and aeronautical information for self-briefing, flight planning and flight information service shall:

- a) provide for continuous and timely updating of the system database and monitoring of the validity and quality of the aeronautical data stored;
- b) permit access to the system by operations personnel including flight crew members, aeronautical personnel concerned and other aeronautical users through suitable telecommunications means;
- c) ensure provision, in paper copy form, of the aeronautical data and aeronautical information accessed, as required;
- d) use access and interrogation procedures based on abbreviated plain language and ICAO location indicators, as appropriate, or based on a menu-driven user interface or other appropriate mechanism as agreed between the civil aviation authority and operator concerned; and
- e) provide for rapid response to a user request for information.

Note.— ICAO abbreviations and codes and location indicators are given respectively in the Procedures for Air Navigation Services — ICAO Abbreviations and Codes (PANS-ABC, Doc 8400) and Location Indicators (Doc 7910).

5.5.6 Automated pre-flight information systems providing a harmonized, common point of access by operations personnel, including flight crew members and other aeronautical personnel concerned, to aeronautical information in accordance with 5.5.3 and meteorological information in accordance with 9.4.1 of Annex 3 — *Meteorological Service for International Air Navigation*, should be established by an agreement between the civil aviation authority or the agency to which the authority to provide service has been delegated in accordance with 2.1.1 c) and the relevant meteorological authority.

5.5.7 Where automated pre-flight information systems are used to provide the harmonized, common point of access by operations personnel, including flight crew members and other aeronautical personnel concerned, to aeronautical data, aeronautical information and meteorological information, the civil aviation authority or the agency to which the authority to provide service has been delegated in accordance with 2.1.1 c) shall remain responsible for the quality and timeliness of the aeronautical data and aeronautical information provided by means of such a system.

Note.— The meteorological authority concerned remains responsible for the quality of the meteorological information provided by means of such a system in accordance with 9.4.3 of Annex 3.

CHAPTER 6 - AERONAUTICAL INFORMATION UPDATES

6.1 Aeronautical Information Product updates

6.1.1 The same update cycle shall be applied to the AIP Amendments, the AIP data set and the Instrument Flight Procedures data set in order to ensure the coherence of the data items that appear in multiple Aeronautical Information Products.

6.1.2 Specifications for AIP Amendments

6.1.2.1 The AIP Amendment regular interval shall be specified in the AIP, Part 1 — General (GEN).

Note.— Guidance material on the establishment of intervals between publication dates of AIP Amendments is contained in Doc 8126.

6.1.2.2 When an AIP Amendment will not be published at the established interval or publication date, a NIL notification shall be originated and distributed by the NOTAM checklist.

6.1.2.3 Recourse to hand amendments or annotations shall be kept to a minimum.

6.1.2.4 When the AIP is provided in more than one volume, each volume should include separate amendment services.

6.1.3 Specifications for AIP Supplements

6.1.3.1 When an error occurs in an AIP Supplement or when the period of validity of an AIP Supplement is changed, a new AIP Supplement shall be published as a replacement.

Note 1.— The requirements for NOTAM apply when time constraints do not allow sufficient time for the distribution of an AIP Supplement.

Note 2.— Guidance material on the use of AIP Supplements together with examples of such use is contained in Doc 8126.

6.1.4 Specifications for NOTAM

6.1.4.1 NOTAM should be published with sufficient lead time for the affected parties to take any required action, except in the case of unserviceability, volcanic activity, release of radioactive material, toxic chemicals and other events that cannot be foreseen.

6.1.4.2 NOTAM notifying unserviceability of aids to air navigation, facilities or communication services shall give an estimate of the period of unserviceability or the time at which restoration of service is expected.

6.1.4.3 At least seven days' advance notice should be given of the activation of established danger, restricted or prohibited areas and of activities requiring temporary airspace restrictions other than for emergency operations.

6.1.4.4 Notice of any subsequent cancellation of the activities or any reduction of the hours of activity or the dimensions of the airspace should be given as soon as possible.

Note.— Whenever possible, at least 24 hours' advance notice is desirable, to permit timely completion of the notification process and to facilitate airspace utilization planning.

6.1.4.5 Within three months from the issuing of a permanent NOTAM, the information contained in the NOTAM shall be included in the Aeronautical Information Products affected.

6.1.4.6 Within three months from the issuing of a temporary NOTAM of long duration, the information contained in the NOTAM shall be included in an AIP Supplement.

6.1.4.7 When a NOTAM with estimated end of validity unexpectedly exceeds the three-month period, a replacement NOTAM shall be issued, unless the condition is expected to last for a further period of more than three months; in this case, an AIP Supplement shall be issued.

6.1.4.8 When an AIP Amendment or an AIP Supplement is published in accordance with AIRAC procedures, a so-called "Trigger" NOTAM shall be originated giving a brief description of the contents, the effective date and time, and the reference number of the amendment or supplement.

6.1.4.9 This NOTAM shall come into force on the same effective date and time as the amendment or supplement and shall remain valid in the pre-flight information bulletin for a period of fourteen days.

6.1.4.10 In the case of an AIP Amendment, a "Trigger" NOTAM shall remain valid for a period of fourteen days.

6.1.4.11 In the case of an AIP Supplement that is valid for less than fourteen days, the "Trigger" NOTAM shall remain valid for the complete validity period of the AIP Supplement.

6.1.4.12 In the case of an AIP Supplement that is valid for fourteen days or more, the "Trigger" NOTAM shall remain valid for at least fourteen days.

Note.— Guidance material for the origination of NOTAM announcing the existence of AIRAC AIP Amendments or AIP Supplements ("Trigger NOTAM") is contained in the Aeronautical Information Services Manual (Doc 8126).

6.1.5 Specifications for digital data updates

6.1.5.1 The update interval for the AIP data set and Instrument Flight Procedures data sets shall be specified in data product specification.

6.1.5.2 Data sets that have been made available in advance (according to the AIRAC cycle) shall be updated with the non-AIRAC changes that occurred in between the publication and the effective date.

APPENDIX 1. AERONAUTICAL DATA CATALOGUE

Note 1.— The Aeronautical Data Catalogue is available electronically and will be provided as part of the PANS-AIM.

Note 2.— The Data Catalogue is a general description of the AIM data scope and consolidates all data that can be collected and maintained by the aeronautical information service. It provides a reference for aeronautical data origination and publication requirements.

Note 3.— The Data Catalogue provides a means for States to facilitate the identification of the organizations and authorities responsible for the origination of the aeronautical data and information. It is also providing a common language and facilitating the formal arrangements between data originators and the aeronautical information service. It includes data quality requirements applicable from origination through to publication.

Note 4.— The Data Catalogue is a reference of the aeronautical data subjects, properties and sub-properties organized in:

<i>Table A1-1</i>	<i>Aerodrome data;</i>
<i>Table A1-2</i>	<i>Airspace data;</i>
<i>Table A1-3</i>	<i>ATS and other routes data;</i>
<i>Table A1-4</i>	<i>Instrument flight procedure data;</i>
<i>Table A1-5</i>	<i>Radio navigation aids/systems data;</i>
<i>Table A1-6</i>	<i>Obstacle data;</i>
<i>Table A1-7</i>	<i>Geographic data;</i>
<i>Table A1-8</i>	<i>Terrain data;</i>
<i>Table A1-9</i>	<i>Data types; and</i>
<i>Table A1-10</i>	<i>Information about national and local regulations, services and procedures.</i>

Note 5.— The Data Catalogue provides detailed descriptions of all subjects, properties and sub-properties, the data quality requirements and the data types.

Note 6.— The data types describe the nature of the property and sub-property and specify the data elements to be collected.

Note 7.— The tables of the Data Catalogue are composed of the following columns:

- (1) Subject for which data can be collected*
- (2)(3) Property is a an identifiable characteristic of a subject which can be further defined into sub-properties*

The classification of a catalogue element as subject, property or sub-property does not impose a certain data model.

- (4) The data is classified in different types. See Table A1-9 for more information on data types.*
- (5) A description of the data element*
- (6) Notes are additional information or conditions of the provision*
- (7) Accuracy requirements for aeronautical data are based upon a 95 per cent confidence level.*

For those fixes and points that are serving a dual purpose, e.g. holding point and missed approach point, the higher accuracy applies.

Accuracy requirements for obstacle and terrain data are based upon a 90 per cent confidence level.

(8) Integrity classification

(9) Origination type: positional data is identified as surveyed, calculated or declared

(10) Publication resolution

The publication resolutions for geographical position data (latitude and longitude) are applicable to coordinates formatted in degrees, minutes, seconds. When a different format is used (such as degrees with decimals for digital data sets) or when the location is significantly further to the North/South, the publication resolution needs to be commensurate with the accuracy requirements.

(11) Chart resolution.

APPENDIX 2. CONTENTS OF THE AERONAUTICAL INFORMATION PUBLICATION (AIP)

Note 1.— The information elements prefixed with “#AIP-DS#” may be left out when available through the AIP data set (as specified in Chapter 5, 5.2.1.1.3).

Note 2.— The information elements prefixed with “#OBS-DS#” may be left out when available through the Obstacle data set (as specified in Chapter 5, 5.3.3.2.2).

PART 1 — GENERAL (GEN)

When the AIP is produced as one volume, the preface, record of AIP Amendments, record of AIP Supplements, checklist of AIP pages and list of current hand amendments appear only in Part 1 — GEN, and the annotation “not applicable” shall be entered against each of these subsections in Parts 2 and 3.

If an AIP is produced and made available in more than one volume with each having a separate amendment and supplement service, a separate preface, record of AIP Amendments, record of AIP Supplements, checklist of AIP pages and list of current hand amendments shall be included in each volume.

GEN 0.1 Preface

Brief description of the Aeronautical Information Publication (AIP), including:

- 1) name of the publishing authority;
- 2) applicable ICAO documents;
- 3) publication media (i.e. printed, online or other electronic media);
- 4) the AIP structure and established regular amendment interval;
- 5) copyright policy, if applicable; and
- 6) service to contact in case of detected AIP errors or omissions.

GEN 0.2 Record of AIP Amendments

A record of AIP Amendments and AIRAC AIP Amendments (published in accordance with the AIRAC system) containing:

- 1) amendment number;
- 2) publication date;
- 3) date inserted (for the AIRAC AIP Amendments, effective date); and
- 4) initials of officer who inserted the amendment.

GEN 0.3 Record of AIP Supplements

A record of issued AIP Supplements containing:

- 1) Supplement number;

- 2) Supplement subject;
- 3) AIP section(s) affected;
- 4) period of validity; and
- 5) cancellation record.

GEN 0.4 Checklist of AIP pages

A checklist of AIP pages containing:

- 1) page number/chart title; and
- 2) publication or effective date (day, month by name and year) of the aeronautical information.

GEN 0.5 List of hand amendments to the AIP

A list of current hand amendments to the AIP containing:

- 1) AIP page(s) affected;
- 2) amendment text; and
- 3) AIP Amendment number by which a hand amendment was introduced.

GEN 0.6 Table of contents to Part 1

A list of sections and subsections contained in Part 1 — General (GEN).

Note.— Subsections may be listed alphabetically.

GEN 1. NATIONAL REGULATIONS AND REQUIREMENTS

GEN 1.1 Designated authorities

The addresses of designated authorities concerned with the facilitation of international air navigation (civil aviation, meteorology, customs, immigration, health, en-route and aerodrome/heliport charges, agricultural quarantine and aircraft accident investigation) containing, for each authority:

- 1) designated authority;
- 2) name of the authority;
- 3) postal address;
- 4) telephone number;
- 5) telefax number;
- 6) e-mail address;
- 7) aeronautical fixed service (AFS) address; and
- 8) website address, if available.

GEN 1.2 Entry, transit and departure of aircraft

Regulations and requirements for advance notification and applications for permission concerning entry, transit and departure of aircraft on international flights.

GEN 1.3 Entry, transit and departure of passengers and crew

Regulations (including customs, immigration and quarantine, and requirements for advance notification and applications for permission) concerning entry, transit and departure of non-immigrant passengers and crew.

GEN 1.4 Entry, transit and departure of cargo

Regulations (including customs, and requirements for advance notification and applications for permission) concerning entry, transit and departure of cargo.

Note.— Provisions for facilitating entry and departure for search, rescue, salvage, investigation, repair or salvage in connection with lost or damaged aircraft are detailed in section GEN 3.6, Search and rescue.

GEN 1.5 Aircraft instruments, equipment and flight documents

Brief description of aircraft instruments, equipment and flight documents, including:

- 1) instruments, equipment (including aircraft communication, navigation and surveillance equipment) and flight documents to be carried on aircraft, including any special requirement in addition to the provisions specified in Annex 6, Part I, Chapters 6 and 7; and
- 2) emergency locator transmitter (ELT), signalling devices and life-saving equipment as presented in Annex 6, Part I, 6.6 and Part II, 2.4.5, where so determined by regional air navigation meetings, for flights over designated land areas.

GEN 1.6 Summary of national regulations and international agreements/conventions

A list of titles and references and, where applicable, summaries of national regulations affecting air navigation, together with a list of international agreements/conventions ratified by State.

GEN 1.7 Differences from ICAO Standards, Recommended Practices and Procedures

A list of significant differences between national regulations and practices of the State and related ICAO provisions, including:

- 1) provision affected (Annex and edition number, paragraph); and
- 2) difference in full text.

All significant differences shall be listed under this subsection. All Annexes shall be listed in numerical order even if there is no difference to an Annex, in which case a NIL notification shall be provided. National differences or the degree of non-application of the regional supplementary procedures (SUPPs) shall be notified immediately following the Annex to which the supplementary procedure relates.

GEN 2. TABLES AND CODES

GEN 2.1 Measuring system, aircraft markings, holidays

GEN 2.1.1 Units of measurement

Description of units of measurement used including table of units of measurement.

GEN 2.1.2 Temporal reference system

Description of the temporal reference system (calendar and time system) employed, together with an indication of whether or not daylight saving hours are employed and how the temporal reference system is presented throughout the AIP.

GEN 2.1.3 Horizontal reference system

Brief description of the horizontal (geodetic) reference system used, including:

- 1) name/designation of the reference system;
- 2) identification and parameters of the projection;
- 3) identification of the ellipsoid used;
- 4) identification of the datum used;
- 5) area(s) of application; and
- 6) an explanation, if applicable, of the asterisk used to identify those coordinates that do not meet the accuracy requirements.

GEN 2.1.4 Vertical reference system

Brief description of the vertical reference system used, including:

- 1) name/designation of the reference system;
- 2) description of the geoid model used including the parameters required for height transformation between the model used and EGM-96; and
- 3) an explanation, if applicable, of the asterisk used to identify those elevations/geoid undulations that do not meet accuracy requirements.

GEN 2.1.5 Aircraft nationality and registration marks

Indication of aircraft nationality and registration marks adopted by the State.

GEN 2.1.6 Public holidays

A list of public holidays with indication of services being affected.

GEN 2.2 Abbreviations used in AIS publications

A list of alphabetically arranged abbreviations and their respective significations used by the State in its AIP and in the distribution of aeronautical data and aeronautical information with appropriate annotation for those national abbreviations that are different from those contained in the *Procedures for Air Navigation Services — ICAO Abbreviations and Codes* (PANS-ABC, Doc 8400).

Note.— A list of alphabetically arranged definitions/glossary of terms may also be added.

GEN 2.3 Chart symbols

A list of chart symbols arranged according to the chart series where symbols are applied.

GEN 2.4 Location indicators

A list of alphabetically arranged location indicators assigned to the locations of aeronautical fixed stations to be used for encoding and decoding purposes. An annotation to locations not connected to the aeronautical fixed service (AFS) shall be provided.

GEN 2.5 List of radio navigation aids

A list of radio navigation aids arranged alphabetically, containing:

- 1) identifier;
- 2) name of the station;
- 3) type of facility/aid; and
- 4) indication whether aid serves en-route (E), aerodrome (A) or dual (AE) purposes.

GEN 2.6 Conversion of units of measurement

Tables for conversion or, alternatively, conversion formulae between:

- 1) nautical miles and kilometres and vice versa;
- 2) feet and metres and vice versa;
- 3) decimal minutes of arc and seconds of arc and vice versa; and
- 4) other conversions as appropriate.

GEN 2.7 Sunrise/sunset

Information on the time of sunrise and sunset including a brief description of criteria used for determination of the times given and either a simple formulae or table from which times may be calculated for any location within its territory/area of responsibility, or an alphabetical list of locations for which the times are given in a table with a reference to the related page in the table and the sunrise/sunset tables for the selected stations/locations, including:

- 1) station name;
- 2) ICAO location indicator;
- 3) geographical coordinates in degrees and minutes;
- 4) date(s) for which times are given;
- 5) time for the beginning of morning civil twilight;
- 6) time for sunrise;
- 7) time for sunset; and
- 8) time for the end of evening civil twilight.

GEN 3. SERVICES

GEN 3.1 Aeronautical information services

GEN 3.1.1 Responsible service

Description of the Aeronautical Information Service (AIS) provided and its major components, including:

- 1) service/unit name;
- 2) postal address;
- 3) telephone number;
- 4) telefax number;
- 5) e-mail address;
- 6) AFS address;
- 7) website address, if available;
- 8) a statement concerning the ICAO documents on which the service is based and a reference to the AIP location where differences, if any, are listed; and
- 9) an indication if service is not H24.

GEN 3.1.2 Area of responsibility

The area of responsibility for the aeronautical information service.

GEN 3.1.3 Aeronautical publications

Description of the elements of the Aeronautical Information Products, including:

- 1) AIP and related amendment service;
- 2) AIP Supplements;
- 3) AIC;
- 4) NOTAM and pre-flight information bulletins (PIB);
- 5) checklists and lists of valid NOTAM; and
- 6) how they may be obtained.

When an AIC is used to promulgate publication prices, that shall be indicated in this section of the AIP.

GEN 3.1.4 AIRAC system

Brief description of the AIRAC system provided including a table of present and near future AIRAC dates.

GEN 3.1.5 Pre-flight information service at aerodromes/heliports

A list of aerodromes/heliports at which pre-flight information is routinely available, including an indication of relevant:

- 1) elements of the Aeronautical Information Products held;
- 2) maps and charts held; and
- 3) general area of coverage of such data.

GEN 3.1.6 Digital data sets

- 1) Description of the available data sets, including:
 - a) data set title;
 - b) short description;
 - c) data subjects included;
 - d) geographical scope; and
 - e) if applicable, limitations related to its usage
- 2) Contact details of how data sets may be obtained, containing:
 - a) name of the individual, service or organization responsible;
 - b) street address and e-mail address of the individual, service or organization responsible;
 - c) telefax number of the individual, service or organization responsible;
 - d) contact telephone number of the individual, service or organization responsible;
 - e) hours of service (time period including time zone when contact can be made);
 - f) online information that can be used to contact the individual, service or organization; and
 - g) supplemental information, if necessary, on how and when to contact the individual, service or organization.

GEN 3.2 Aeronautical charts

GEN 3.2.1 Responsible service(s)

Description of service(s) responsible for the production of aeronautical charts, including:

- 1) service name;
- 2) postal address;
- 3) telephone number;
- 4) telefax number;
- 5) e-mail address;
- 6) AFS address;
- 7) website address, if available;
- 8) a statement concerning the ICAO documents on which the service is based and a reference to the AIP location where differences, if any, are listed; and

- 9) an indication if service is not H24.

GEN 3.2.2 Maintenance of charts

Brief description of how aeronautical charts are revised and amended.

GEN 3.2.3 Purchase arrangements

Details of how charts may be obtained, containing:

- 1) service/sales agency(ies);
- 2) postal address;
- 3) telephone number;
- 4) telefax number;
- 5) e-mail address;
- 6) AFS address; and
- 7) website address, if available.

GEN 3.2.4 Aeronautical chart series available

A list of aeronautical chart series available followed by a general description of each series and an indication of the intended use.

GEN 3.2.5 List of aeronautical charts available

A list of aeronautical charts available, including:

- 1) title of series;
- 2) scale of series;
- 3) name and/or number of each chart or each sheet in a series;
- 4) price per sheet; and
- 5) date of latest revision.

GEN 3.2.6 Index to the World Aeronautical Chart (WAC) — ICAO 1:1 000 000

An index chart showing coverage and sheet layout for the WAC 1:1 000 000 produced by a State. If Aeronautical Chart — ICAO 1:500 000 is produced instead of WAC 1:1 000 000, index charts shall be used to indicate coverage and sheet layout for the Aeronautical Chart — ICAO 1:500 000.

GEN 3.2.7 Topographical charts

Details of how topographical charts may be obtained, containing:

- 1) name of service/agency(ies);
- 2) postal address;

- 3) telephone number;
- 4) telefax number;
- 5) e-mail address;
- 6) AFS address; and
- 7) website address, if available.

GEN 3.2.8 Corrections to charts not contained in the AIP

A list of corrections to aeronautical charts not contained in the AIP, or an indication where such information can be obtained.

GEN 3.3 Air traffic services

GEN 3.3.1 Responsible service

Description of the air traffic service and its major components, including:

- 1) service name;
- 2) postal address;
- 3) telephone number;
- 4) telefax number;
- 5) e-mail address;
- 6) AFS address;
- 7) website address, if available;
- 8) a statement concerning the ICAO documents on which the service is based and a reference to the AIP location where differences, if any, are listed; and
- 9) an indication if service is not H24.

GEN 3.3.2 Area of responsibility

Brief description of area of responsibility for which air traffic services are provided.

GEN 3.3.3 Types of services

Brief description of main types of air traffic services provided.

GEN 3.3.4 Coordination between the operator and ATS

General conditions under which coordination between the operator and air traffic services is effected.

GEN 3.3.5 Minimum flight altitude

The criteria used to determine minimum flight altitudes.

GEN 3.3.6 ATS units address list

A list of ATS units and their addresses arranged alphabetically, containing:

- 1) unit name;
- 2) postal address;
- 3) telephone number;
- 4) telefax number;
- 5) e-mail address;
- 6) AFS address; and
- 7) website address, if available.

GEN 3.4 Communication services

GEN 3.4.1 Responsible service

Description of the service responsible for the provision of telecommunication and navigation facilities, including:

- 1) service name;
- 2) postal address;
- 3) telephone number;
- 4) telefax number;
- 5) e-mail address;
- 6) AFS address;
- 7) website address, if available;
- 8) a statement concerning the ICAO documents on which the service is based and a reference to the AIP location where differences, if any, are listed; and
- 9) an indication if service is not H24.

GEN 3.4.2 Area of responsibility

Brief description of area of responsibility for which telecommunication service is provided.

GEN 3.4.3 Types of service

Brief description of the main types of service and facilities provided, including:

- 1) radio navigation services;
- 2) voice and/or data link services;
- 3) broadcasting service;
- 4) language(s) used; and
- 5) an indication of where detailed information can be obtained.

GEN 3.4.4 Requirements and conditions

Brief description concerning the requirements and conditions under which the communication service is available.

GEN 3.4.5 Miscellaneous

Any additional information (e.g. selected radio broadcasting stations, telecommunications diagram).

GEN 3.5 Meteorological services

GEN 3.5.1 Responsible service

Brief description of the meteorological service responsible for the provision of meteorological information, including:

- 1) service name;
- 2) postal address;
- 3) telephone number;
- 4) telefax number;
- 5) e-mail address;
- 6) AFS address;
- 7) website address, if available;
- 8) a statement concerning the ICAO documents on which the service is based and a reference to the AIP location where differences, if any, are listed; and
- 9) an indication if service is not H24.

GEN 3.5.2 Area of responsibility

Brief description of area and/or air routes for which meteorological service is provided.

GEN 3.5.3 Meteorological observations and reports

Detailed description of the meteorological observations and reports provided for international air navigation, including:

- 1) name of the station and the ICAO location indicator;
- 2) type and frequency of observation including an indication of automatic observing equipment;
- 3) types of meteorological reports (e.g. METAR) and availability of a trend forecast;
- 4) specific type of observation system and number of observation sites used to observe and report surface wind, visibility, runway visual range, cloud base, temperature and, where applicable, wind shear (e.g. anemometer at intersection of runways, transmissometer next to touchdown zone, etc.);
- 5) hours of operation; and
- 6) indication of aeronautical climatological information available.

GEN 3.5.4 Types of services

Brief description of the main types of service provided, including details of briefing, consultation, display of meteorological information, flight documentation available for operators and flight crew members, and of the methods and means used for supplying the meteorological information.

GEN 3.5.5 Notification required from operators

Minimum amount of advance notice required by the meteorological authority from operators in respect of briefing, consultation and flight documentation and other meteorological information they require or change.

GEN 3.5.6 Aircraft reports

As necessary, requirements of the meteorological authority for the making and transmission of aircraft reports.

GEN 3.5.7 VOLMET service

Description of VOLMET and/or D-VOLMET service, including:

- 1) name of transmitting station;
- 2) call sign or identification and abbreviation for the radio communication emission;
- 3) frequency or frequencies used for broadcast;
- 4) broadcasting period;
- 5) hours of service;
- 6) list of aerodromes/heliports for which reports and/or forecasts are included; and
- 7) reports, forecasts and SIGMET information included and remarks.

GEN 3.5.8 SIGMET and AIRMET service

Description of the meteorological watch provided within flight information regions or control areas for which air traffic services are provided, including a list of the meteorological watch offices with:

- 1) name of the meteorological watch office, ICAO location indicator;
- 2) hours of service;
- 3) flight information region(s) or control area(s) served;
- 4) SIGMET validity periods;
- 5) specific procedures applied to SIGMET information (e.g. for volcanic ash and tropical cyclones);
- 6) procedures applied to AIRMET information (in accordance with relevant regional air navigation agreements);

- 7) the air traffic services unit(s) provided with SIGMET and AIRMET information; and
- 8) additional information (e.g. concerning any limitation of service, etc.).

GEN 3.5.9 Other automated meteorological services

Description of available automated services for the provision of meteorological information (e.g. automated pre-flight information service accessible by telephone and/or computer modem) including:

- 1) service name;
- 2) information available;
- 3) areas, routes and aerodromes covered; and
- 4) telephone and telefax number(s), e-mail address, and, if available, website address.

GEN 3.6 Search and rescue

GEN 3.6.1 Responsible service(s)

Brief description of service(s) responsible for the provision of search and rescue (SAR), including:

- 1) service/unit name;
- 2) postal address;
- 3) telephone number;
- 4) telefax number;
- 5) e-mail address;
- 6) AFS address;
- 7) website address, if available; and
- 8) a statement concerning the ICAO documents on which the service is based and a reference to the AIP location where differences, if any, are listed.

GEN 3.6.2 Area of responsibility

Brief description of area of responsibility within which search and rescue services are provided.

Note.— A chart may be included to supplement the description of the area.

GEN 3.6.3 Types of service

Brief description and geographical portrayal, where appropriate, of the type of service and facilities provided including indications where SAR aerial coverage is dependent upon significant deployment of aircraft.

GEN 3.6.4 SAR agreements

Brief description of SAR agreements in force, including provisions for facilitating entry and departure of other States' aircraft for search, rescue, salvage, repair or salvage in connection with lost or damaged aircraft, either with airborne notification only or after flight plan notification.

GEN 3.6.5 Conditions of availability

Brief description of provisions for search and rescue, including the general conditions under which the service and facilities are available for international use, including an indication of whether a facility available for search and rescue is specialized in SAR techniques and functions, or is specially used for other purposes but adapted for SAR purposes by training and equipment, or is only occasionally available and has no particular training or preparation for SAR work.

GEN 3.6.6 Procedures and signals used

Brief description of the procedures and signals employed by rescue aircraft and a table showing the signals to be used by survivors.

GEN 4. CHARGES FOR AERODROMES/HELIPORTS AND AIR NAVIGATION SERVICES

Reference may be made to where details of actual charges may be found, if not itemized in this chapter.

GEN 4.1 Aerodrome/heliport charges

Brief description of type of charges which may be applicable at aerodromes/heliports available for international use, including:

- 1) landing of aircraft;
- 2) parking, hangarage and long-term storage of aircraft;
- 3) passenger service;
- 4) security;
- 5) noise-related items;
- 6) other (customs, health, immigration, etc.);
- 7) exemptions/reductions; and
- 8) methods of payment.

GEN 4.2 Air navigation services charges

Brief description of charges which may be applicable to air navigation services provided for international use, including:

- 1) approach control;

- 2) route air navigation services;
- 3) cost basis for air navigation services and exemptions/reductions; and
- 4) methods of payment.

PART 2 — EN-ROUTE (ENR)

If an AIP is produced and made available in more than one volume with each having a separate amendment and supplement service, a separate preface, record of AIP Amendments, record of AIP Supplements, checklist of AIP pages and list of current hand amendments shall be included in each volume. In the case of an AIP being published as one volume, the annotation “not applicable” shall be entered against each of the above subsections.

ENR 0.6 Table of contents to Part 2

A list of sections and subsections contained in Part 2 — En-route.

Note.— Subsections may be listed alphabetically.

ENR 1. GENERAL RULES AND PROCEDURES

ENR 1.1 General rules

The requirement is for publication of the general rules as applied within the State.

ENR 1.2 Visual flight rules

The requirement is for publication of the visual flight rules as applied within the State.

ENR 1.3 Instrument flight rules

The requirement is for publication of the instrument flight rules as applied within the State.

ENR 1.4 ATS airspace classification and description

ENR 1.4.1 ATS airspace classification

The description of ATS airspace classes in the form of the ATS airspace classification table in Annex 11, Appendix 4, appropriately annotated to indicate those airspace classes not used by the State.

ENR 1.4.2 ATS airspace description

Other ATS airspace descriptions as applicable, including general textual descriptions.

ENR 1.5 Holding, approach and departure procedures

ENR 1.5.1 General

The requirement is for a statement concerning the criteria on which holding, approach and departure procedures are established. If different from ICAO provisions, the requirement is for presentation of criteria used in a tabular form.

ENR 1.5.2 Arriving flights

The requirement is to present procedures (conventional or area navigation or both) for arriving flights which are common to flights into or within the same type of airspace. If different procedures apply within a terminal airspace, a note to this effect shall be given together with a reference to where the specific procedures can be found.

ENR 1.5.3 Departing flights

The requirement is to present procedures (conventional or area navigation or both) for departing flights which are common to flights departing from any aerodrome/heliport.

ENR 1.5.4 Other relevant information and procedures

Brief description of additional information, e.g. entry procedures, final approach alignment, holding procedures and patterns.

ENR 1.6 ATS surveillance services and procedures

ENR 1.6.1 Primary radar

Description of primary radar services and procedures, including:

- 1) supplementary services;
- 2) the application of radar control service;
- 3) radar and air-ground communication failure procedures;
- 4) voice and CPDLC position reporting requirements; and
- 5) graphic portrayal of area of radar coverage.

ENR 1.6.2 Secondary surveillance radar (SSR)

Description of secondary surveillance radar (SSR) operating procedures, including:

- 1) emergency procedures;
- 2) air-ground communication failure and unlawful interference procedures;
- 3) the system of SSR code assignment;
- 4) voice and CPDLC position reporting requirements; and

-
- 5) graphic portrayal of area of SSR coverage.

Note.— The SSR description is of particular importance in areas or routes where the possibility of interception exists.

ENR 1.6.3 Automatic dependent surveillance — broadcast (ADS-B)

Description of automatic dependent surveillance — broadcast (ADS-B) operating procedures, including:

- 1) emergency procedures;
- 2) air-ground communication failure and unlawful interference procedures;
- 3) aircraft identification requirements;
- 4) voice and CPDLC position reporting requirements; and
- 5) graphic portrayal of area of ADS-B coverage.

Note.— The ADS-B description is of particular importance in areas or routes where the possibility of interception exists.

ENR 1.6.4 Other relevant information and procedures

Brief description of additional information and procedures, e.g. radar failure procedures and transponder failure procedures.

ENR 1.7 Altimeter setting procedures

The requirement is for a statement of altimeter setting procedures in use, containing:

- 1) brief introduction with a statement concerning the ICAO documents on which the procedures are based together with differences to ICAO provisions, if any;
- 2) basic altimeter setting procedures;
- 3) description of altimeter setting region(s);
- 4) procedures applicable to operators (including pilots); and
- 5) table of cruising levels.

ENR 1.8 Regional supplementary procedures

The requirement is for presentation of regional supplementary procedures (SUPPs) affecting the entire area of responsibility.

ENR 1.9 Air traffic flow management and airspace management

Brief description of air traffic flow management (ATFM) system and airspace management, including:

- 1) ATFM structure, service area, service provided, location of unit(s) and hours of operation;
- 2) types of flow messages and descriptions of the formats; and

3) procedures applicable for departing flights, containing:

- a) service responsible for provision of information on applied ATFM measures;
- b) flight plan requirements; and
- c) slot allocations.

4) *information on overall responsibility regarding airspace management within FIR(s), details of civil/military airspace allocation and management coordination, structure of manageable airspace (allocation and changes to allocation) and general operating procedures.*

ENR 1.10 Flight planning

The requirement is to indicate any restriction, limitation or advisory information related to the flight planning stage which may assist the user in the presentation of the intended flight operation, including:

- 1) procedures for the submission of a flight plan;
- 2) repetitive flight plan system; and
- 3) changes to the submitted flight plan.

ENR 1.11 Addressing of flight plan messages

The requirement is for an indication, in tabular form, of the addresses allocated to flight plans, showing:

- 1) category of flight (IFR, VFR or both);
- 2) route (into or via FIR and/or TMA); and
- 3) message address.

ENR 1.12 Interception of civil aircraft

The requirement is for a complete statement of interception procedures and visual signals to be used with a clear indication of whether ICAO provisions are applied and, if not, that differences exist.

Note.— A list of significant differences between national regulations and practices of the State and related ICAO provisions is found in Gen 1.7.

ENR 1.13 Unlawful interference

The requirement is for presentation of appropriate procedures to be applied in case of unlawful interference.

ENR 1.14 Air traffic incidents

Description of air traffic incidents reporting system, including:

- 1) definition of air traffic incidents;
- 2) use of the “Air Traffic Incident Reporting Form”;

-
- 3) reporting procedures (including in-flight procedures); and
 - 4) purpose of reporting and handling of the form.

Note.— A copy of the “Air Traffic Incident Report Form” (PANS ATM, Doc 4444, Appendix 4) may be included for reference.

ENR 2. AIR TRAFFIC SERVICES AIRSPACE

ENR 2.1 FIR, UIR, TMA AND CTA

#AIP-DS# Detailed description of flight information regions (FIR), upper flight information regions (UIR), and control areas (CTA) (including specific CTA such as TMA), including:

- 1) name, geographical coordinates in degrees and minutes of the FIR/UIR lateral limits and in degrees, minutes and seconds of the CTA lateral limits, vertical limits and class of airspace;
- 2) identification of unit providing the service;
- 3) call sign of aeronautical station serving the unit and language(s) used, specifying the area and conditions, when and where to be used, if applicable;
- 4) frequencies, and if applicable SATVOICE number, supplemented by indications for specific purposes; and
- 5) remarks.

#AIP-DS# Control zones around military air bases not otherwise described in the AIP shall be included in this subsection. Where the requirements of Annex 2 concerning flight plans, two-way communications and position reporting apply to all flights in order to eliminate or reduce the need for interceptions and/or where the possibility of interception exists and the maintenance of guard on the VHF emergency channel 121.5 MHz is required, a statement to this effect shall be included for the relevant area(s) or portion(s) thereof.

A description of designated areas over which the carriage of an emergency locator transmitter (ELT) is required and where aircraft shall continuously guard the VHF emergency frequency 121.5 MHz, except for those periods when aircraft are carrying out communications on other VHF channels or when airborne equipment limitations or cockpit duties do not permit simultaneous guarding of two channels.

Note.— Other types of airspace around civil aerodromes/heliports such as control zones and aerodrome traffic zones are described in the relevant aerodrome or heliport section.

ENR 2.2 Other regulated airspace

Where established, a detailed description of other types of regulated airspace and airspace classification.

ENR 3. ATS ROUTES

Note 1.— Bearings, tracks and radials are normally magnetic. In areas of high latitude, where it is determined by the appropriate authority that reference to Magnetic North is impractical, another suitable reference, i.e. True North or Grid North, may be used.

Note 2.— Changeover points established at the midpoint between two radio navigation aids, or at the intersection of the two radials in the case of a route which changes direction between the navigation aids, need not be shown for each route segment if a general statement regarding their existence is made.

Note 3.— Guidance material on the organization of ATS Route publication is contained in the Aeronautical Information Services Manual (Doc 8126).

ENR 3.1 Lower ATS routes

#AIP-DS# Detailed description of lower ATS routes, including:

- 1) route designator, designation of the required communication performance (RCP) specification(s), navigation specification(s) and/or required surveillance performance (RSP) specification(s) applicable to a specified segment(s), names, coded designators or name-codes and the geographical coordinates in degrees, minutes and seconds of all significant points defining the route including “compulsory” or “on-request” reporting points;
- 2) tracks or VOR radials to the nearest degree, geodesic distance to the nearest tenth of a kilometre or tenth of a nautical mile between each successive designated significant point and, in the case of VOR radials, changeover points;
- 3) upper and lower limits or minimum en-route altitudes, to the nearest higher 50 m or 100 ft, and airspace classification;
- 4) lateral limits and minimum obstacle clearance altitudes;
- 5) direction of cruising levels;
- 6) the navigation accuracy requirement for each PBN (RNAV or RNP) route segment; and
- 7) remarks, including an indication of the controlling unit, its operating channel and, if applicable, its logon address, SATVOICE number, and any navigation, RCP and RSP specification(s) limitations.

Note.— In relation to Annex 11, Appendix 1, and for flight planning purposes, the defined navigation specification is not considered to be an integral part of the route designator.

ENR 3.2 Upper ATS routes

#AIP-DS# Detailed description of upper ATS routes, including:

- 1) route designator, designation of the required communication performance (RCP) specification(s), navigation specification(s) and/or required surveillance performance (RSP) specification(s) applicable to a specified segment(s), names, coded designators or name-codes and the geographical coordinates in degrees, minutes and seconds of all significant points defining the route including “compulsory” or “on-request” reporting points;
- 2) tracks or VOR radials to the nearest degree, geodesic distance to the nearest tenth of a kilometre or tenth of a nautical mile between each successive designated significant point and, in the case of VOR radials, changeover points;
- 3) upper and lower limits and airspace classification;
- 4) lateral limits;
- 5) direction of cruising levels;

-
- 6) the navigation accuracy requirement for each PBN (RNAV or RNP) route segment; and
 - 7) remarks, including an indication of the controlling unit, its operating channel and, if applicable, its logon address, SATVOICE number, and any navigation, RCP and RSP specification(s) limitations.

Note.— In relation to Annex 11, Appendix 1, and for flight planning purposes, defined navigation specification is not considered to be an integral part of the route designator.

ENR 3.3 Area navigation routes

#AIP-DS# Detailed description of area navigation (RNAV) routes, including:

- 1) route designator, designation of the required communication performance (RCP) specification(s), navigation specification(s) and/or required surveillance performance (RSP) specification(s) applicable to a specified segment(s), names, coded designators or name-codes and the geographical coordinates in degrees, minutes and seconds of all significant points defining the route including “compulsory” or “on-request” reporting points;
- 2) in respect of waypoints defining an area navigation route, additionally as applicable:
 - a) station identification of the reference VOR/DME;
 - b) bearing to the nearest degree and the distance to the nearest tenth of a kilometre or tenth of a nautical mile from the reference VOR/DME, if the waypoint is not collocated with it; and
 - c) elevation of the transmitting antenna of DME to the nearest 30 m (100 ft);
- 3) magnetic bearing to the nearest degree, geodesic distance to the nearest tenth of a kilometre or tenth of a nautical mile between defined end-points and distance between each successive designated significant point;
- 4) upper and lower limits and airspace classification;
- 5) direction of cruising levels;
- 6) the navigation accuracy requirement for each PBN (RNAV or RNP) route segment; and
- 7) remarks, including an indication of the controlling unit, its operating channel and, if applicable, its logon address, SATVOICE number, and any navigation, RCP and RSP specification(s) limitations.

Note.— In relation to Annex 11, Appendix 1, and for flight planning purposes, defined navigation specification is not considered to be an integral part of the route designator.

ENR 3.4 Helicopter routes

#AIP-DS# Detailed description of helicopter routes, including:

- 1) route designator, designation of the required communication performance (RCP) specification(s), navigation specification(s) and/or required surveillance performance (RSP) specification(s) applicable to a specified segment(s), names, coded designators or name-codes and the geographical coordinates in degrees, minutes and seconds of all significant points defining the route including “compulsory” or “on-request” reporting points;
- 2) tracks or VOR radials to the nearest degree, geodesic distance to the nearest tenth of a kilometre or tenth of a nautical mile between each successive designated significant point and, in the case of VOR radials, changeover points;

-
- 3) upper and lower limits and airspace classification;
 - 4) minimum flight altitudes to the nearest higher 50 m or 100 ft;
 - 5) the navigation accuracy requirement for each PBN (RNAV or RNP) route segment; and
 - 6) remarks, including an indication of the controlling unit, its operating channel and, if applicable, its logon address, SATVOICE number, and any navigation, RCP and RSP specification(s) limitations.

Note.— In relation to Annex 11, Appendix 1, and for flight planning purposes, defined navigation specification is not considered to be an integral part of the route designator.

ENR 3.5 Other routes

#AIP-DS# The requirement is to describe other specifically designated routes which are compulsory within specified area(s).

Note.— Arrival, transit and departure routes which are specified in connection with procedures for traffic to and from aerodromes/heliports need not be described since they are described in the relevant section of Part 3 — Aerodromes.

ENR 3.6 En-route holding

#AIP-DS# The requirement is for a detailed description of en-route holding procedures, containing:

- 1) holding identification (if any) and holding fix (navigation aid) or waypoint with geographical coordinates in degrees, minutes and seconds;
- 2) inbound track;
- 3) direction of the procedure turn;
- 4) maximum indicated airspeed;
- 5) minimum and maximum holding level;
- 6) time/distance outbound; and
- 7) indication of the controlling unit and its operating frequency.

Note.— Obstacle clearance criteria related to holding procedures are contained in Procedures for Air Navigation Services — Aircraft Operations (PANS-OPS, Doc 8168), Volumes I and II.

ENR 4. RADIO NAVIGATION AIDS/SYSTEMS

ENR 4.1 Radio navigation aids — en-route

#AIP-DS# A list of stations providing radio navigation services established for en-route purposes and arranged alphabetically by name of the station, including:

- 1) name of the station and magnetic variation to the nearest degree and for VOR, station declination to the nearest degree used for technical line-up of the aid;

-
- 2) identification;
 - 3) frequency/channel for each element;
 - 4) hours of operation;
 - 5) geographical coordinates in degrees, minutes and seconds of the position of the transmitting antenna;
 - 6) elevation of the transmitting antenna of DME to the nearest 30 m (100 ft); and
 - 7) remarks.

If the operating authority of the facility is other than the designated governmental agency, the name of the operating authority shall be indicated in the remarks column. Facility coverage shall be indicated in the remarks column.

ENR 4.2 Special navigation systems

Description of stations associated with special navigation systems (DECCA, LORAN, etc.), including:

- 1) name of station or chain;
- 2) type of service available (master signal, slave signal, colour);
- 3) frequency (channel number, basic pulse rate, recurrence rate, as applicable);
- 4) hours of operation;
- 5) geographical coordinates in degrees, minutes and seconds of the position of the transmitting station; and
- 6) remarks.

If the operating authority of the facility is other than the designated governmental agency, the name of the operating authority shall be indicated in the remarks column. Facility coverage shall be indicated in the remarks column.

ENR 4.3 Global navigation satellite system (GNSS)

A list and description of elements of the global navigation satellite system (GNSS) providing the navigation service established for en-route purposes and arranged alphabetically by name of the element, including:

- 1) the name of the GNSS element, e.g. GPS, GLONASS, EGNOS, MSAS, WAAS, etc.;
- 2) frequency(ies), as appropriate;
- 3) geographical coordinates in degrees, minutes and seconds of the nominal service area and coverage area; and
- 4) remarks.

If the operating authority of the facility is other than the designated governmental agency, the name of the operating authority shall be indicated in the remarks column.

ENR 4.4 Name-code designators for significant points

#AIP-DS# An alphabetically arranged list of name-code designators (five-letter pronounceable “name-code”) established for significant points at positions not marked by the site of radio navigation aids, including:

- 1) name-code designator;
- 2) geographical coordinates in degrees, minutes and seconds of the position;
- 3) reference to ATS or other routes where the point is located; and
- 4) remarks, including supplementary definition of positions where required.

ENR 4.5 Aeronautical ground lights — en-route

#AIP-DS# A list of aeronautical ground lights and other light beacons designating geographical positions which are selected by the State as being significant, including:

- 1) name of the city or town or other identification of the beacon;
- 2) type of beacon and intensity of the light in thousands of candelas;
- 3) characteristics of the signal;
- 4) operational hours; and
- 5) remarks.

ENR 5. NAVIGATION WARNINGS**ENR 5.1 Prohibited, restricted and danger areas**

#AIP-DS# Description, supplemented by graphic portrayal where appropriate, of prohibited, restricted and danger areas together with information regarding their establishment and activation, including:

- 1) identification, name and geographical coordinates of the lateral limits in degrees, minutes and seconds if inside and in degrees and minutes if outside control area/control zone boundaries;
- 2) upper and lower limits; and
- 3) remarks, including time of activity.

Type of restriction or nature of hazard and risk of interception in the event of penetration shall be indicated in the remarks column.

ENR 5.2 Military exercise and training areas and air defence identification zone (ADIZ)

#AIP-DS# Description, supplemented by graphic portrayal where appropriate, of established military training areas and military exercises taking place at regular intervals, and established air defence identification zone (ADIZ), including:

-
- 1) geographical coordinates of the lateral limits in degrees, minutes and seconds if inside and in degrees and minutes if outside control area/control zone boundaries;
 - 2) upper and lower limits and system and means of activation announcements together with information pertinent to civil flights and applicable ADIZ procedures; and
 - 3) remarks, including time of activity and risk of interception in the event of penetration of ADIZ.

ENR 5.3 Other activities of a dangerous nature and other potential hazards

ENR 5.3.1 Other activities of a dangerous nature

#AIP-DS# Description, supplemented by charts where appropriate, of activities that constitute a specific or obvious danger to aircraft operation and could affect flights including:

- 1) geographical coordinates in degrees and minutes of centre of area and range of influence;
- 2) vertical limits;
- 3) advisory measures;
- 4) authority responsible for the provision of information; and
- 5) remarks, including time of activity.

ENR 5.3.2 Other potential hazards

Description, supplemented by charts where appropriate, of other potential hazards that could affect flights (e.g. active volcanoes, nuclear power stations, etc.) including:

- 1) geographical coordinates in degrees and minutes of location of potential hazard;
- 2) vertical limits;
- 3) advisory measures;
- 4) authority responsible for the provision of information; and
- 5) remarks.

ENR 5.4 Air navigation obstacles

#OBS-DS# The list of obstacles affecting air navigation in Area 1 (the entire State territory), including:

- 1) obstacle identification or designation;
- 2) type of obstacle;
- 3) obstacle position, represented by geographical coordinates in degrees, minutes and seconds;
- 4) obstacle elevation and height to the nearest metre or foot;

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- 5) type and colour of obstacle lighting (if any); and
 - 6) if appropriate, an indication that the list of obstacles is available as digital data set, and a reference to GEN 3.1.6.

Note 1.— An obstacle whose height above the ground is 100 m and higher is considered an obstacle for Area 1.

Note 2.— Specifications concerning the determination and reporting (accuracy of field work and data integrity) of positions (latitude and longitude) and elevations/heights for obstacles in Area 1 are given in Appendix 1.

ENR 5.5 Aerial sporting and recreational activities

#AIP-DS# Brief description, supplemented by graphic portrayal where appropriate, of intensive aerial sporting and recreational activities together with conditions under which they are carried out, including:

- 1) designation and geographical coordinates of the lateral limits in degrees, minutes and seconds if inside and in degrees and minutes if outside control area/control zone boundaries;
- 2) vertical limits;
- 3) operator/user telephone number; and
- 4) remarks, including time of activity.

Note.— This paragraph may be subdivided into different sections for each different category of activity, giving the indicated details in each case.

ENR 5.6 Bird migration and areas with sensitive fauna

Description, supplemented by charts where practicable, of movements of birds associated with migration, including migration routes and permanent resting areas and areas with sensitive fauna.

ENR 6. EN-ROUTE CHARTS

The requirement is for the En-route Chart — ICAO and index charts to be included in this section.

PART 3 — AERODROMES (AD)

If an AIP is produced and made available in more than one volume with each having a separate amendment and supplement service, a separate preface, record of AIP Amendments, record of AIP Supplements, checklist of AIP pages and list of current hand amendments shall be included in each volume. In the case of an AIP being published as one volume, the annotation “not applicable” shall be entered against each of the above subsections.

AD 0.6 Table of contents to Part 3

A list of sections and subsections contained in Part 3 — Aerodromes (AD).

Note.— Subsections may be listed alphabetically.

AD 1. AERODROMES/HELIPORTS — INTRODUCTION

AD 1.1 Aerodrome/heliport availability and conditions of use

AD 1.1.1 General conditions

Brief description of the State's designated authority responsible for aerodromes and heliports, including:

- 1) the general conditions under which aerodromes/heliports and associated facilities are available for use; and
- 2) a statement concerning the ICAO documents on which the services are based and a reference to the AIP location where differences, if any, are listed.

AD 1.1.2 Use of military air bases

Regulations and procedures, if any, concerning civil use of military air bases.

AD 1.1.3 Low visibility procedures (LVP)

The general conditions under which the low visibility procedures applicable to Cat II/III operations at aerodromes, if any, are applied.

AD 1.1.4 Aerodrome operating minima

Details of aerodrome operating minima applied by the State.

AD 1.1.5 Other information

If applicable, other information of a similar nature.

AD 1.2 Rescue and firefighting services and snow plan

AD 1.2.1 Rescue and firefighting services

Brief description of rules governing the establishment of rescue and firefighting services at aerodromes and heliports available for public use together with an indication of rescue and firefighting categories established by a State.

AD 1.2.2 Snow plan

Brief description of general snow plan considerations for aerodromes/heliports available for public use at which snow conditions are normally liable to occur, including:

- 1) organization of the winter service;
- 2) surveillance of movement areas;
- 3) measuring methods and measurements taken;
- 4) actions taken to maintain the usability of movement areas;
- 5) system and means of reporting;

-
- 6) the cases of runway closure; and
 - 7) distribution of information about snow conditions.

Note.— Where different snow plan considerations apply at aerodromes/heliports, this subparagraph may be subdivided accordingly.

AD 1.3 Index to aerodromes and heliports

A list, supplemented by graphic portrayal, of aerodromes and heliports within a State, including:

- 1) aerodrome/heliport name and ICAO location indicator;
- 2) type of traffic permitted to use the aerodrome/heliport (international/national, IFR/VFR, scheduled/non-scheduled, general aviation, military and other); and
- 3) reference to AIP, Part 3 subsection in which aerodrome/heliport details are presented.

AD 1.4 Grouping of aerodromes/heliports

Brief description of the criteria applied by the State in grouping aerodromes/heliports for production/distribution/provision of information purposes (e.g. international/national; primary/secondary; major/other; civil/military; etc.).

AD 1.5 Status of certification of aerodromes

A list of aerodromes in the State, indicating the status of certification, including:

- 1) aerodrome name and ICAO location indicator;
- 2) date and, if applicable, validity of certification; and
- 3) remarks, if any.

AD 2. AERODROMES

Note.— **** is to be replaced by the relevant ICAO location indicator.

****** AD 2.1 Aerodrome location indicator and name**

The requirement is for the ICAO location indicator allocated to the aerodrome and the name of aerodrome. An ICAO location indicator shall be an integral part of the referencing system applicable to all subsections in section AD 2.

****** AD 2.2 Aerodrome geographical and administrative data**

The requirement is for aerodrome geographical and administrative data including:

- 1) aerodrome reference point (geographical coordinates in degrees, minutes and seconds) and its site;
- 2) direction and distance of aerodrome reference point from centre of the city or town which the aerodrome serves;
- 3) aerodrome elevation to the nearest metre or foot, reference temperature and mean low temperature;
- 4) where appropriate, geoid undulation at the aerodrome elevation position to the nearest metre or foot;

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- 5) magnetic variation to the nearest degree, date of information and annual change;
 - 6) name of aerodrome operator, address, telephone and telefax numbers, e-mail address, AFS address and, if available, website address;
 - 7) types of traffic permitted to use the aerodrome (IFR/VFR); and
 - 8) remarks.

****** AD 2.3 Operational hours**

Detailed description of the hours of operation of services at the aerodrome, including:

- 1) aerodrome operator;
- 2) customs and immigration;
- 3) health and sanitation;
- 4) AIS briefing office;
- 5) ATS reporting office (ARO);
- 6) MET briefing office;
- 7) air traffic service;
- 8) fuelling;
- 9) handling;
- 10) security;
- 11) de-icing; and
- 12) remarks.

****** AD 2.4 Handling services and facilities**

Detailed description of the handling services and facilities available at the aerodrome, including:

- 1) cargo-handling facilities;
- 2) fuel and oil types;
- 3) fuelling facilities and capacity;
- 4) de-icing facilities;
- 5) hangar space for visiting aircraft;
- 6) repair facilities for visiting aircraft; and
- 7) remarks.

****** AD 2.5 Passenger facilities**

Passenger facilities available at the aerodrome, provided as a brief description or a reference to other information sources such as a website including:

- 1) hotel(s) at or in the vicinity of aerodrome;
- 2) restaurant(s) at or in the vicinity of aerodrome;
- 3) transportation possibilities;
- 4) medical facilities;
- 5) bank and post office at or in the vicinity of aerodrome;
- 6) tourist office; and
- 7) remarks.

****** AD 2.6 Rescue and firefighting services**

Detailed description of the rescue and firefighting services and equipment available at the aerodrome, including:

- 1) aerodrome category for fire fighting;
- 2) rescue equipment;
- 3) capability for removal of disabled aircraft; and
- 4) remarks.

******* AD 2.7 Seasonal availability — clearing**

Detailed description of the equipment and operational priorities established for the clearance of aerodrome movement areas, including:

- 1) type(s) of clearing equipment;
- 2) clearance priorities; and
- 3) remarks.

******* AD 2.8 Aprons, taxiways and check locations/positions data**

Details related to the physical characteristics of aprons, taxiways and locations/positions of designated checkpoints, including:

- 1) designation, surface and strength of aprons;
- 2) designation, width, surface and strength of taxiways;
- 3) location and elevation to the nearest metre or foot of altimeter checkpoints;
- 4) location of VOR checkpoints;
- 5) position of INS checkpoints in degrees, minutes, seconds and hundredths of seconds; and

6) remarks.

If check locations/positions are presented on an aerodrome chart, a note to that effect shall be provided under this subsection.

****** AD 2.9 Surface movement guidance and control system and markings**

Brief description of the surface movement guidance and control system and runway and taxiway markings, including:

- 1) use of aircraft stand identification signs, taxiway guide lines and visual docking/parking guidance system at aircraft stands;
- 2) runway and taxiway markings and lights;
- 3) stop bars and runway guard lights (if any);
- 4) other runway protection measures; and
- 5) remarks.

****** AD 2.10 Aerodrome obstacles**

#OBS-DS# Detailed description of obstacles, including:

- 1) obstacles in Area 2:
 - a) obstacle identification or designation;
 - b) type of obstacle;
 - c) obstacle position, represented by geographical coordinates in degrees, minutes, seconds and tenths of seconds;
 - d) obstacle elevation and height to the nearest metre or foot;
 - e) obstacle marking, and type and colour of obstacle lighting (if any);
 - f) if appropriate, an indication that the list of obstacles is available as digital data set as digital data set, and a reference to GEN 3.1.6; and
 - g) NIL indication, if appropriate.

Note 1.— Annex 15, Appendix 1, provides a description of Area 2 while Annex 15, Appendix 1, Figure A1-2, contains graphical illustrations of obstacle data collection surfaces and criteria used to identify obstacles in Area 2.

Note 2.— Specifications concerning the determination and reporting (accuracy of field work and data integrity) of positions (latitude and longitude) and elevations for obstacles in Area 2 are given in Appendix 1.

- 2) the absence of an Area 2 data set for the aerodrome is to be clearly stated and obstacle data are to be provided for:
 - a) obstacles that penetrate the obstacle limitation surfaces;
 - b) obstacles that penetrate the take-off flight path area obstacle identification surface; and
 - c) other obstacles assessed as being hazardous to air navigation.
- 3) indication that information on obstacles in Area 3 is not provided, or if provided:
 - a) obstacle identification or designation;

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- b) type of obstacle;
 - c) obstacle position, represented by geographical coordinates in degrees, minutes, seconds and tenths of seconds;
 - d) obstacle elevation and height to the nearest tenth of a metre or tenth of a foot;
 - e) obstacle marking, and type and colour of obstacle lighting (if any);
 - f) if appropriate, an indication that the list of obstacles is available as digital data set, and a reference to GEN 3.1.6; and
 - g) NIL indication, if appropriate.

Note 1.— Annex 15, Appendix 1, provides a description of Area 3 while Annex 15, Appendix 1, Figure A1-3, contains graphical illustrations of obstacle data collection surfaces and criteria used to identify obstacles in Area 3.

Note 2.— Specifications concerning the determination and reporting (accuracy of field work and data integrity) of positions (latitude and longitude) and elevations for obstacles in Area 3 are given in Appendix 1.

****** AD 2.11 Meteorological information provided**

Detailed description of meteorological information provided at the aerodrome and an indication of which meteorological office is responsible for the service enumerated, including:

- 1) name of the associated meteorological office;
- 2) hours of service and, where applicable, the designation of the responsible meteorological office outside these hours;
- 3) office responsible for preparation of TAFs and periods of validity and interval of issuance of the forecasts;
- 4) availability of the trend forecasts for the aerodrome, and interval of issuance;
- 5) information on how briefing and/or consultation is provided;
- 6) types of flight documentation supplied and language(s) used in flight documentation;
- 7) charts and other information displayed or available for briefing or consultation;
- 8) supplementary equipment available for providing information on meteorological conditions, e.g. weather radar and receiver for satellite images;
- 9) the air traffic services unit(s) provided with meteorological information; and
- 10) additional information (e.g. concerning any limitation of service, etc.).

****** AD 2.12 Runway physical characteristics**

Detailed description of runway physical characteristics, for each runway, including:

- 1) designations;
- 2) true bearings to one-hundredth of a degree;
- 3) dimensions of runways to the nearest metre or foot;
- 4) strength of pavement (PCN and associated data) and surface of each runway and associated stopways;
- 5) geographical coordinates in degrees, minutes, seconds and hundredths of seconds for each threshold and runway end and, where appropriate, geoid undulation of:

-
- thresholds of a non-precision approach runway to the nearest metre or foot; and
 - thresholds of a precision approach runway to the nearest tenth of a metre or tenth of a foot;

6) elevations of:

- thresholds of a non-precision approach runway to the nearest metre or foot; and
- thresholds and the highest elevation of the touchdown zone of a precision approach runway to the nearest tenth of a metre or tenth of a foot;

7) slope of each runway and associated stopways;

8) dimensions of stopway (if any) to the nearest metre or foot;

9) dimensions of clearway (if any) to the nearest metre or foot;

10) dimensions of strips;

11) dimensions of runway end safety areas;

12) location (which runway end) and description of arresting system (if any);

13) the existence of an obstacle-free zone; and

14) remarks.

****** AD 2.13 Declared distances**

Detailed description of declared distances to the nearest metre or foot for each direction of each runway, including:

- 1) runway designator;
- 2) take-off run available;
- 3) take-off distance available, and if applicable, alternative reduced declared distances;
- 4) accelerate-stop distance available;
- 5) landing distance available; and
- 6) remarks, including runway entry or start point where alternative reduced declared distances have been declared.

If a runway direction cannot be used for take-off or landing, or both, because it is operationally forbidden, then this shall be declared and the words “not usable” or the abbreviation “NU” entered (Annex 14, Volume I, Attachment A, Section 3).

****** AD 2.14 Approach and runway lighting**

Detailed description of approach and runway lighting, including:

- 1) runway designator;
- 2) type, length and intensity of approach lighting system;
- 3) runway threshold lights, colour and wing bars;
- 4) type of visual approach slope indicator system;

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- 5) length of runway touchdown zone lights;
 - 6) length, spacing, colour and intensity of runway centre line lights;
 - 7) length, spacing, colour and intensity of runway edge lights;
 - 8) colour of runway end lights and wing bars;
 - 9) length and colour of stopway lights; and
 - 10) remarks.

****** AD 2.15 Other lighting, secondary power supply**

Description of other lighting and secondary power supply, including:

- 1) location, characteristics and hours of operation of aerodrome beacon/identification beacon (if any);
- 2) location and lighting (if any) of anemometer/landing direction indicator;
- 3) taxiway edge and taxiway centre line lights;
- 4) secondary power supply including switch-over time; and
- 5) remarks.

****** AD 2.16 Helicopter landing area**

Detailed description of helicopter landing area provided at the aerodrome, including:

- 1) geographical coordinates in degrees, minutes, seconds and hundredths of seconds and, where appropriate, geoid undulation of the geometric centre of touchdown and lift-off (TLOF) or of each threshold of final approach and take-off (FATO) area:
 - for non-precision approaches, to the nearest metre or foot; and
 - for precision approaches, to the nearest tenth of a metre or tenth of a foot;
- 2) TLOF and/or FATO area elevation:
 - for non-precision approaches, to the nearest metre or foot; and
 - for precision approaches, to the nearest tenth of a metre or tenth of a foot;
- 3) TLOF and FATO area dimensions to the nearest metre or foot, surface type, bearing strength and marking;
- 4) true bearings to one-hundredth of a degree of FATO;
- 5) declared distances available, to the nearest metre or foot;
- 6) approach and FATO lighting; and
- 7) remarks.

****** AD 2.17 Air traffic services airspace**

Detailed description of air traffic services (ATS) airspace organized at the aerodrome, including:

- 1) airspace designation and geographical coordinates in degrees, minutes and seconds of the lateral limits;

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- 2) vertical limits;
 - 3) airspace classification;
 - 4) call sign and language(s) of the ATS unit providing service;
 - 5) transition altitude;
 - 6) hours of applicability; and
 - 7) remarks.

****** AD 2.18 Air traffic services communication facilities**

Detailed description of air traffic services communication facilities established at the aerodrome, including:

- 1) service designation;
- 2) call sign;
- 3) channel(s);
- 4) SATVOICE number(s), if available;
- 5) logon address, as appropriate;
- 6) hours of operation; and
- 7) remarks.

****** AD 2.19 Radio navigation and landing aids**

#AIP-DS# Detailed description of radio navigation and landing aids associated with the instrument approach and the terminal area procedures at the aerodrome, including:

- 1) type of aids, magnetic variation to the nearest degree, as appropriate, and type of supported operation for ILS/MLS, basic GNSS, SBAS, and GBAS and for VOR/ILS/MLS also station declination to the nearest degree used for technical line-up of the aid;
- 2) identification, if required;
- 3) frequency(ies), channel number(s), service provider, and reference path identifier(s) (RPI), as appropriate;
- 4) hours of operation, as appropriate;
- 5) geographical coordinates in degrees, minutes, seconds and tenths of seconds of the position of the transmitting antenna, as appropriate;
- 6) elevation of the transmitting antenna of DME to the nearest 30 m (100 ft) and of DME/P to the nearest 3 m (10 ft), elevation of GBAS reference point to the nearest metre or foot, and the ellipsoid height of the point to the nearest metre or foot. For SBAS, the ellipsoid height of the landing threshold point (LTP) or the fictitious threshold point (FTP) to the nearest metre or foot;
- 7) service volume radius from the GBAS reference point to the nearest kilometre or nautical mile; and
- 8) remarks.

When the same aid is used for both en-route and aerodrome purposes, a description shall also be given in section ENR 4. If the ground-based augmentation system (GBAS) serves more than one aerodrome, description of the aid shall be provided under each aerodrome. If the operating authority of the facility is other than the designated governmental agency, the name of the operating authority shall be indicated in the remarks column. Facility coverage shall be indicated in the remarks column.

****** AD 2.20 Local aerodrome regulations**

Detailed description of regulations applicable to the use of the aerodrome including the acceptability of training flights, non-radio and microlight aircraft and similar, and to ground manoeuvring and parking but excluding flight procedures.

****** AD 2.21 Noise abatement procedures**

Detailed description of noise abatement procedures established at the aerodrome.

****** AD 2.22 Flight procedures**

Detailed description of the conditions and flight procedures, including radar and/or ADS-B procedures, established on the basis of airspace organization at the aerodrome. When established, detailed description of the low visibility procedures at the aerodrome, including:

- 1) runway(s) and associated equipment authorized for use under low visibility procedures;
- 2) defined meteorological conditions under which initiation, use and termination of low visibility procedures would be made;
- 3) description of ground marking/lighting for use under low visibility procedures; and
- 4) remarks.

****** AD 2.23 Additional information**

Additional information at the aerodrome, such as an indication of bird concentrations at the aerodrome, together with an indication of significant daily movement between resting and feeding areas, to the extent practicable.

****** AD 2.24 Charts related to an aerodrome**

The requirement is for charts related to an aerodrome to be included in the following order:

- 1) Aerodrome/Heliport Chart — ICAO;
- 2) Aircraft Parking/Docking Chart — ICAO;
- 3) Aerodrome Ground Movement Chart — ICAO;
- 4) Aerodrome Obstacle Chart — ICAO Type A (for each runway);
- 5) Aerodrome Terrain and Obstacle Chart — ICAO (Electronic);
- 6) Precision Approach Terrain Chart — ICAO (precision approach Cat II and III runways);
- 7) Area Chart — ICAO (departure and transit routes);
- 8) Standard Departure Chart — Instrument — ICAO;
- 9) Area Chart — ICAO (arrival and transit routes);
- 10) Standard Arrival Chart — Instrument — ICAO;
- 11) ATC Surveillance Minimum Altitude Chart — ICAO;

12) Instrument Approach Chart — ICAO (for each runway and procedure type);

13) Visual Approach Chart — ICAO; and

14) bird concentrations in the vicinity of the aerodrome.

If some of the charts are not produced, a statement to this effect shall be given in section GEN 3.2, Aeronautical charts.

Note.— A page pocket may be used in the AIP to include the Aerodrome Terrain and Obstacle Chart — ICAO (Electronic) on appropriate electronic media.

AD 3. HELIPORTS

When a helicopter landing area is provided at the aerodrome, associated data shall be listed only under **** AD 2.16.

Note.— **** is to be replaced by the relevant ICAO location indicator.

****** AD 3.1 Heliport location indicator and name**

The requirement is for the ICAO location indicator assigned to the heliport and the name of heliport. An ICAO location indicator shall be an integral part of the referencing system applicable to all subsections in section AD 3.

****** AD 3.2 Heliport geographical and administrative data**

The requirement is for heliport geographical and administrative data, including:

- 1) heliport reference point (geographical coordinates in degrees, minutes and seconds) and its site;
- 2) direction and distance of heliport reference point from centre of the city or town which the heliport serves;
- 3) heliport elevation to the nearest metre or foot, reference temperature and mean low temperature;
- 4) where appropriate, geoid undulation at the heliport elevation position to the nearest metre or foot;
- 5) magnetic variation to the nearest degree, date of information and annual change;
- 6) name of heliport operator, address, telephone and telefax numbers, e-mail address, AFS address and, if available, website address;
- 7) types of traffic permitted to use the heliport (IFR/VFR); and
- 8) remarks.

****** AD 3.3 Operational hours**

Detailed description of the hours of operation of services at the heliport, including:

- 1) heliport operator;
- 2) customs and immigration;
- 3) health and sanitation;

- 4) AIS briefing office;
- 5) ATS reporting office (ARO);
- 6) MET briefing office;
- 7) air traffic service;
- 8) fuelling;
- 9) handling;
- 10) security;
- 11) de-icing; and
- 12) remarks.

****** AD 3.4 Handling services and facilities**

Detailed description of the handling services and facilities available at the heliport, including:

- 1) cargo-handling facilities;
- 2) fuel and oil types;
- 3) fuelling facilities and capacity;
- 4) de-icing facilities;
- 5) hangar space for visiting helicopter;
- 6) repair facilities for visiting helicopter; and
- 7) remarks.

****** AD 3.5 Passenger facilities**

Passenger facilities available at the heliport, provided as a brief description or as a reference to other information sources such as a website, including:

- 1) hotel(s) at or in the vicinity of the heliport;
- 2) restaurant(s) at or in the vicinity of the heliport;
- 3) transportation possibilities;
- 4) medical facilities;
- 5) bank and post office at or in the vicinity of the heliport;
- 6) tourist office; and
- 7) remarks.

****** AD 3.6 Rescue and firefighting services**

Detailed description of the rescue and firefighting services and equipment available at the heliport, including:

-
- 1) heliport category for fire fighting;
 - 2) rescue equipment;
 - 3) capability for removal of disabled helicopter; and
 - 4) remarks.

****** AD 3.7 Seasonal availability — clearing**

Detailed description of the equipment and operational priorities established for the clearance of heliport movement areas, including:

- 1) type(s) of clearing equipment;
- 2) clearance priorities; and
- 3) remarks.

****** AD 3.8 Aprons, taxiways and check locations/positions data**

Details related to the physical characteristics of aprons, taxiways and locations/positions of designated checkpoints, including:

- 1) designation, surface and strength of aprons, helicopter stands;
- 2) designation, width, and surface type of helicopter ground taxiways;
- 3) width and designation of helicopter air taxiway and air transit route;
- 4) location and elevation to the nearest metre or foot of altimeter checkpoints;
- 5) location of VOR checkpoints;
- 6) position of INS checkpoints in degrees, minutes, seconds and hundredths of seconds; and
- 7) remarks.

If check locations/positions are presented on a heliport chart, a note to that effect shall be provided under this subsection.

****** AD 3.9 Markings and markers**

Brief description of final approach and take-off area and taxiway markings and markers, including:

- 1) final approach and take-off markings;
- 2) taxiway markings, air taxiway markers and air transit route markers; and
- 3) remarks.

****** AD 3.10 Heliport obstacles**

#OBS-DS# Detailed description of obstacles, including:

- 1) obstacle identification or designation;
- 2) type of obstacle;

-
- 3) obstacle position, represented by geographical coordinates in degrees, minutes, seconds and tenths of seconds;
 - 4) obstacle elevation and height to the nearest metre or foot;
 - 5) obstacle marking, and type and colour of obstacle lighting (if any);
 - 6) if appropriate, an indication that the list of obstacles is available as digital data set, and a reference to GEN 3.1.6; and
 - 7) NIL indication, if appropriate.

****** AD 3.11 Meteorological information provided**

Detailed description of meteorological information provided at the heliport and an indication of which meteorological office is responsible for the service enumerated, including:

- 1) name of the associated meteorological office;
- 2) hours of service and, where applicable, the designation of the responsible meteorological office outside these hours;
- 3) office responsible for preparation of TAFs, and periods of validity of the forecasts;
- 4) availability of the trend forecasts for the heliport, and interval of issuance;
- 5) information on how briefing and/or consultation is provided;
- 6) type of flight documentation supplied and language(s) used in flight documentation;
- 7) charts and other information displayed or available for briefing or consultation;
- 8) supplementary equipment available for providing information on meteorological conditions, e.g. weather radar and receiver for satellite images;
- 9) the air traffic services unit(s) provided with meteorological information; and
- 10) additional information (e.g. concerning any limitation of service, etc.).

****** AD 3.12 Heliport data**

Detailed description of heliport dimensions and related information, including:

- 1) heliport type — surface-level, elevated or helideck;
- 2) touchdown and lift-off (TLOF) area dimensions to the nearest metre or foot;
- 3) true bearings to one-hundredth of a degree of final approach and take-off (FATO) area;
- 4) dimensions to the nearest metre or foot of FATO, and surface type;
- 5) surface and bearing strength in tonnes (1 000 kg) of TLOF;
- 6) geographical coordinates in degrees, minutes, seconds and hundredths of seconds and, where appropriate, geoid undulation of the geometric centre of TLOF or of each threshold of FATO:
 - for non-precision approaches, to the nearest metre or foot; and
 - for precision approaches, to the nearest tenth of a metre or tenth of a foot;
- 7) TLOF and/or FATO slope and elevation:

-
- for non-precision approaches, to the nearest metre or foot; and
 - for precision approaches, to the nearest tenth of a metre or tenth of a foot;
 - 8) dimensions of safety area;
 - 9) dimensions, to the nearest metre or foot, of helicopter clearway;
 - 10) the existence of an obstacle-free sector; and
 - 11) remarks.

****** AD 3.13 Declared distances**

Detailed description of declared distances to the nearest metre or foot, where relevant for a heliport, including:

- 1) take-off distance available, and if applicable, alternative reduced declared distances;
- 2) rejected take-off distance available;
- 3) landing distance available; and
- 4) remarks, including entry or start point where alternative reduced declared distances have been declared.

****** AD 3.14 Approach and FATO lighting**

Detailed description of approach and FATO lighting, including:

- 1) type, length and intensity of approach lighting system;
- 2) type of visual approach slope indicator system;
- 3) characteristics and location of FATO area lights;
- 4) characteristics and location of aiming point lights;
- 5) characteristics and location of TLOF lighting system; and
- 6) remarks.

****** AD 3.15 Other lighting, secondary power supply**

Description of other lighting and secondary power supply, including:

- 1) location, characteristics and hours of operation of heliport beacon;
- 2) location and lighting of wind direction indicator (WDI);
- 3) taxiway edge and taxiway centre line lights;
- 4) secondary power supply including switch-over time; and
- 5) remarks.

****** AD 3.16 Air traffic services airspace**

Detailed description of air traffic services (ATS) airspace organized at the heliport, including:

- 1) airspace designation and geographical coordinates in degrees, minutes and seconds of the lateral limits;

-
- 2) vertical limits;
 - 3) airspace classification;
 - 4) call sign and language(s) of ATS unit providing service;
 - 5) transition altitude;
 - 6) hours of applicability; and
 - 7) remarks.

****** AD 3.17 Air traffic services communication facilities**

Detailed description of air traffic services communication facilities established at the heliport, including:

- 1) service designation;
- 2) call sign;
- 3) frequency(ies);
- 4) hours of operation; and
- 5) remarks.

****** AD 3.18 Radio navigation and landing aids**

Detailed description of radio navigation and landing aids associated with the instrument approach and the terminal area procedures at the heliport, including:

- 1) type of aids, magnetic variation (for VOR, station declination used for technical line-up of the aid) to the nearest degree, and type of operation for ILS, MLS, basic GNSS, SBAS and GBAS;
- 2) identification, if required;
- 3) frequency(ies), as appropriate;
- 4) hours of operation, as appropriate;
- 5) geographical coordinates in degrees, minutes, seconds and tenths of seconds of the position of the transmitting antenna, as appropriate;
- 6) elevation of the transmitting antenna of DME to the nearest 30 m (100 ft) and of DME/P to the nearest 3 m (10 ft); and
- 7) remarks.

When the same aid is used for both en-route and heliport purposes, a description shall also be given in section ENR 4. If the ground-based augmentation system (GBAS) serves more than one heliport, description of the aid shall be provided under each heliport. If the operating authority of the facility is other than the designated governmental agency, the name of the operating authority shall be indicated in the remarks column. Facility coverage shall be indicated in the remarks column.

****** AD 3.19 Local heliport regulations**

Detailed description of regulations applicable to the use of the heliport, including the acceptability of training flights, non-radio and microlight aircraft and similar, and to ground manoeuvring and parking but excluding flight procedures.

****** AD 3.20 Noise abatement procedures**

Detailed description of noise abatement procedures established at the heliport.

****** AD 3.21 Flight procedures**

Detailed description of the conditions and flight procedures, including radar and/or ADS-B procedures, established on the basis of airspace organization established at the heliport. When established, detailed description of the low visibility procedures at the heliport, including:

- 1) touchdown and lift-off (TLOF) area(s) and associated equipment authorized for use under low visibility procedures;
- 2) defined meteorological conditions under which initiation, use and termination of low visibility procedures would be made;
- 3) description of ground marking/lighting for use under low visibility procedures; and
- 4) remarks.

****** AD 3.22 Additional information**

Additional information about the heliport, such as an indication of bird concentrations at the heliport together with an indication of significant daily movement between resting and feeding areas, to the extent practicable.

****** AD 3.23 Charts related to a heliport**

The requirement is for charts related to a heliport to be included in the following order:

- 1) Aerodrome/Heliport Chart — ICAO;
- 2) Area Chart — ICAO (departure and transit routes);
- 3) Standard Departure Chart — Instrument — ICAO;
- 4) Area Chart — ICAO (arrival and transit routes);
- 5) Standard Arrival Chart — Instrument — ICAO;
- 6) ATC Surveillance Minimum Altitude Chart — ICAO;
- 7) Instrument Approach Chart — ICAO (for each procedure type);
- 8) Visual Approach Chart — ICAO; and
- 9) bird concentrations in the vicinity of heliport.

If some of the charts are not produced, a statement to this effect shall be given in section GEN 3.2, Aeronautical charts.

APPENDIX 3. NOTAM FORMAT

(see Chapter 5, 5.2.5)

Priority Indicator																	→	
Address																		
																		≡
Date and time of filing																	→	
Originator's Indicator																	≡(	
Message Series, Number and Identifier																		
NOTAM containing new information		 NOTAMN (series and number/year)																
NOTAM replacing a previous NOTAM		 NOTAMR..... (series and number/year) (series and number/year of NOTAM to be replaced)																
NOTAM cancelling a previous NOTAM		 NOTAMC..... (series and number/year) (series and number/year of NOTAM to be cancelled)																≡
Qualifiers																		
	FIR	NOTAM Code	Traffic	Purpose	Scope	Lower Limit	Upper Limit	Coordinates, Radius										
Q)																	≡	
Identification of ICAO location indicator in which the facility, airspace or condition reported on is located								A)								→		
Period of Validity																		
From (date-time group)				B)													→	
To (PERM or date-time group)				C)												EST* PERM*	≡	
Time Schedule (if applicable)				D)												→		
																≡		
Text of NOTAM; Plain-language Entry (using ICAO Abbreviations)																		
E)																		
																		≡
Lower Limit		F)																→
Upper Limit		G)																) ≡
Signature																		

*Delete as appropriate

INSTRUCTIONS FOR THE COMPLETION OF THE NOTAM FORMAT**1. General**

The qualifier line (Item Q) and all identifiers (Items A) to G) inclusive) each followed by a closing parenthesis, as shown in the format, shall be transmitted unless there is no entry to be made against a particular identifier.

2. NOTAM numbering

Each NOTAM shall be allocated a series identified by a letter and a four-digit number followed by a stroke and a two-digit number for the year (e.g. A0023/03). Each series shall start on 1 January with number 0001.

3. Qualifiers (Item Q)

Item Q) is divided into eight fields, each separated by a stroke. An entry shall be made in each field. Examples of how fields are to be filled are shown in the *Aeronautical Information Services Manual* (Doc 8126). The definition of the field is as follows:

1) FIR

- a) If the subject of the information is located geographically within one FIR, the ICAO location indicator shall be that of the FIR concerned. When an aerodrome is situated within the overlying FIR of another State, the first field of Item Q) shall contain the code for that overlying FIR (e.g. Q) LFRR/...A) EGJJ);

or,

if the subject of the information is located geographically within more than one FIR, the FIR field shall be composed of the ICAO nationality letters of the State originating the NOTAM followed by “XX”. (The location indicator of the overlying UIR shall not be used). The ICAO location indicators of the FIRs concerned shall then be listed in Item A) or indicator of State or non-governmental agency which is responsible for provision of a navigation service in more than one State.

- b) If one State issues a NOTAM affecting FIRs in a group of States, the first two letters of the ICAO location indicator of the issuing State plus “XX” shall be included. The location indicators of the FIRs concerned shall then be listed in Item A) or indicator of State or non-governmental agency which is responsible for provision of a navigation service in more than one State.

2) NOTAM CODE

All NOTAM Code groups contain a total of five letters and the first letter is always the letter Q. The second and third letters identify the subject, and the fourth and fifth letters denote the status or condition of the subject reported upon. The two-letter codes for subjects and conditions are those contained in the PANS-ABC (Doc 8400). For combinations of second and third, and fourth and fifth letters, refer to the NOTAM Selection Criteria contained in Doc 8126 or insert one of the following combinations, as appropriate:

- a) If the subject is not listed in the NOTAM Code (Doc 8400) or in the NOTAM Selection Criteria (Doc 8126), insert “XX” as the second and third letters (e.g. QXXAK); if the subject is “XX”, use “XX” also for condition (e.g. QXXXXX).”

- b) If the condition of the subject is not listed in the NOTAM Code (Doc 8400) or in the NOTAM Selection Criteria (Doc 8126), insert “XX” as the fourth and fifth letters (e.g. QFAXX);
- c) When a NOTAM containing operationally significant information is issued in accordance with Appendix 3 and Chapter 6 and when it is used to announce the existence of AIRAC AIP Amendments or Supplements, insert “TT” as the fourth and fifth letters of the NOTAM Code;
- d) When a NOTAM is issued containing a checklist of valid NOTAM, insert “KKKK” as the second, third, fourth and fifth letters; and
- e) The following fourth and fifth letters of the NOTAM Code shall be used in NOTAM cancellations:

AK = RESUMED NORMAL OPERATION
 AL = OPERATIVE (OR RE-OPERATIVE) SUBJECT TO PREVIOUSLY PUBLISHED
 LIMITATIONS/CONDITIONS
 AO = OPERATIONAL
 CC = COMPLETED
 CN = CANCELLED
 HV = WORK COMPLETED
 XX = PLAIN LANGUAGE

Note 1.— As Q - - AO = Operational is used for NOTAM cancellation, NOTAM promulgating new equipment or services use the following fourth and fifth letters Q - - CS = Installed.

Note 2.— Q - - CN = CANCELLED shall be used to cancel planned activities, e.g. navigation warnings; Q - - HV = WORK COMPLETED is used to cancel work in progress.

3) TRAFFIC

I = IFR
 V = VFR
 K = NOTAM is a checklist

Note.— Depending on the NOTAM subject and content, the qualifier field TRAFFIC may contain combined qualifiers. Guidance concerning the combination of TRAFFIC qualifiers with subject and conditions in accordance with the NOTAM Selection Criteria is contained in Doc 8126.

4) PURPOSE

N = NOTAM selected for the immediate attention of flight crew members
 B = NOTAM of operational significance selected for PIB entry
 O = NOTAM concerning flight operations
 M = Miscellaneous NOTAM; not subject for a briefing, but it is available on request
 K = NOTAM is a checklist

Note.— Depending on the NOTAM subject and content, the qualifier field PURPOSE may contain the combined qualifiers BO or NBO. Guidance concerning the combination of PURPOSE qualifiers with subject and conditions in accordance with the NOTAM Selection Criteria is contained in Doc 8126.

5) SCOPE

- A = Aerodrome
- E = En-route
- W = Nav Warning
- K = NOTAM is a checklist

Note.— Depending on the NOTAM subject and content, the qualifier field SCOPE may contain combined qualifiers. Guidance concerning the combination of SCOPE qualifiers with subject and conditions in accordance with the NOTAM Selection Criteria is contained in Doc 8126. If the subject is qualified AE, the aerodrome location indicator shall be reported in Item A).

6) and 7) LOWER/UPPER

LOWER and UPPER limits shall only be expressed in flight levels (FL) and shall express the actual vertical limits of the area of influence without the addition of buffers. In the case of navigation warnings and airspace restrictions, values entered shall be consistent with those provided under Items F) and G).

If the subject does not contain specific height information, insert “000” for LOWER and “999” for UPPER as default values.

8) COORDINATES, RADIUS

The latitude and longitude accurate to one minute, as well as a three-digit distance figure giving the radius of influence in NM (e.g. 4700N01140E043). Coordinates present approximate centre of circle whose radius encompasses the whole area of influence, and if the NOTAM affects the entire FIR/UIR or more than one FIR/UIR, enter the default value “999” for radius.

4. Item A)

Insert the location indicator as contained in ICAO Doc 7910 of the aerodrome or FIR in which the facility, airspace, or condition being reported on is located. More than one FIR/UIR may be indicated when appropriate. If there is no available ICAO location indicator, use the ICAO nationality letter as given in ICAO Doc 7910, Part 2, plus “XX” and followed up in Item E) by the name, in plain language.

If information concerns GNSS, insert the appropriate ICAO location indicator allocated for a GNSS element or the common location indicator allocated for all elements of GNSS (except GBAS).

Note.— In the case of GNSS, the location indicator may be used when identifying a GNSS element outage (e.g. KNMH for a GPS satellite outage).

5. Item B)

For date-time group use a ten-figure group, giving year, month, day, hours and minutes in UTC. This entry is the date-time at which the NOTAMN comes into force. In the cases of NOTAMR and NOTAMC, the date-time group is the actual date and time of the NOTAM origination. The start of a day shall be indicated by “0000”.

6. Item C)

With the exception of NOTAMC, a date-time group (a ten-figure group giving year, month, day, hours and minutes in UTC) indicating duration of information shall be used unless the information is of a permanent nature in which case the abbreviation “PERM” is inserted instead. The end of a day shall be indicated by “2359” (i.e. do not use “2400”). If the information on timing is uncertain, the approximate duration shall be indicated using a date-time group followed by the abbreviation “EST”. Any NOTAM which includes an “EST” shall be cancelled or replaced before the date-time specified in Item C).

7. Item D)

If the hazard, status of operation or condition of facilities being reported on will be active in accordance with a specific time and date schedule between the dates-times indicated in Items B) and C), insert such information under Item D). If Item D) exceeds 200 characters, consideration shall be given to providing such information in a separate, consecutive NOTAM.

Note.— Guidance concerning a harmonized definition of Item D) content is provided in Doc 8126.

8. Item E)

Use decoded NOTAM Code, complemented where necessary by ICAO abbreviations, indicators, identifiers, designators, call signs, frequencies, figures and plain language. When NOTAM is selected for international distribution, English text shall be included for those parts expressed in plain language. This entry shall be clear and concise in order to provide a suitable PIB entry. In the case of NOTAMC, a subject reference and status message shall be included to enable accurate plausibility checks.

9. Items F) and G)

These items are normally applicable to navigation warnings or airspace restrictions and are usually part of the PIB entry. Insert both lower and upper height limits of activities or restrictions, clearly indicating only one reference datum and unit of measurement. The abbreviations GND or SFC shall be used in Item F) to designate ground and surface respectively. The abbreviation UNL shall be used in Item G) to designate unlimited.

Note.— For NOTAM examples see Doc 8126 and the PANS-ABC (Doc 8400).

APPENDIX 4. SNOWTAM FORMAT

(see Chapter 5, 5.2.5)

(COM heading)	(PRIORITY INDICATOR)		(ADDRESSES)														<≡			
	(DATE AND TIME OF FILING)						(ORIGINATOR'S INDICATOR)										<≡			
(Abbreviated heading)	(SWAA* SERIAL NUMBER)						(LOCATION INDICATOR)				DATE-TIME OF OBSERVATION						(OPTIONAL GROUP)			
	S	W	*	*															<<≡(	

SNOWTAM	(Serial number)	<≡
(AERODROME LOCATION INDICATOR)		A) <≡
(DATE-TIME OF OBSERVATION <i>(Time of completion of measurement in UTC)</i>)		B) —————→
(RUNWAY DESIGNATOR)		C) —————→
(CLEARED RUNWAY LENGTH, IF LESS THAN PUBLISHED LENGTH <i>(m)</i>)		D) —————→
(CLEARED RUNWAY WIDTH, IF LESS THAN PUBLISHED WIDTH <i>(m; if offset left or right of centre line add “L” or “R”)</i>)		E) —————→
(DEPOSITS OVER TOTAL RUNWAY LENGTH <i>(Observed on each third of the runway, starting from threshold having the lower runway designation number)</i> NIL — CLEAR AND DRY 1 — DAMP 2 — WET 3 — RIME OR FROST COVERED <i>(depth normally less than 1 mm)</i> 4 — DRY SNOW 5 — WET SNOW 6 — SLUSH 7 — ICE 8 — COMPACTED OR ROLLED SNOW 9 — FROZEN RUTS OR RIDGES)		F) / /

SIGNATURE OF ORIGINATOR *(not for transmission)*

INSTRUCTIONS FOR THE COMPLETION OF THE SNOWTAM FORMAT

1. General

- a) When reporting on more than one runway, repeat Items B to P inclusive.
- b) Items together with their indicator shall be dropped completely, where no information is to be included.
- c) Metric units shall be used and the unit of measurement not reported.
- d) The maximum validity of SNOWTAM is 24 hours. New SNOWTAM shall be issued whenever there is a significant change in conditions. The following changes relating to runway conditions are considered as significant:
 - 1) a change in the coefficient of friction of about 0.05;
 - 2) changes in depth of deposit greater than the following: 20 mm for dry snow, 10 mm for wet snow, 3 mm for slush;
 - 3) a change in the available length or width of a runway of 10 per cent or more;
 - 4) any change in the type of deposit or extent of coverage which requires reclassification in Items F or T of the SNOWTAM;
 - 5) when critical snow banks exist on one or both sides of the runway, any change in the height or distance from centre line;
 - 6) any change in the conspicuity of runway lighting caused by obscuring of the lights;
 - 7) any other conditions known to be significant according to experience or local circumstances.
- e) The abbreviated heading “TTAAiiii CCCC MMYYGggg (BBB)” is included to facilitate the automatic processing of SNOWTAM messages in computer data banks. The explanation of these symbols is:

TT = data designator for SNOWTAM = SW;

AA = geographical designator for States, e.g. LF = FRANCE, EG = United Kingdom (see *Location Indicators* (Doc 7910), Part 2, Index to Nationality Letters for Location Indicators);

iiii = SNOWTAM serial number in a four-digit group;

CCCC = four-letter location indicator of the aerodrome to which the SNOWTAM refers (see *Location Indicators* (Doc 7910));

MMYYGggg = date/time of observation/measurement, whereby:

MM = month, e.g. January = 01, December = 12

YY = day of the month

Gggg = time in hours (GG) and minutes (gg) UTC;

(BBB) = optional group for:

Correction to SNOWTAM message previously disseminated with the same serial number = COR.

Note 1.— Brackets in (BBB) are used to indicate that this group is optional.

Note 2.— When reporting on more than one runway and individual dates/times of observation/measurement are indicated by repeated Item B, the latest date/time of observation/measuring is inserted in the abbreviated heading (MMYYGggg).

Example: Abbreviated heading of SNOWTAM No. 149 from Zurich, measurement/observation of 7 November at 0620 UTC:

SWLS0149 LSZH 11070620

Note.— The information groups are separated by a space, as illustrated above.

- f) The text “SNOWTAM” in the SNOWTAM Format and the SNOWTAM serial number in a four-digit group shall be separated by a space, for example: SNOWTAM 0124.
 - g) For readability purposes for the SNOWTAM message, include a line feed after the SNOWTAM serial number, after Item A, after the last item referring to the runway (e.g. Item P) and after Item S.
2. *Item A* — Aerodrome location indicator (four-letter location indicator).
 3. *Item B* — Eight-figure date/time group — giving time of observation as month, day, hour and minute in UTC; this item shall always be completed.
 4. *Item C* — Lower runway designator number.
 5. *Item D* — Cleared runway length in metres, if less than published length (see Item T on reporting on part of runway not cleared).
 6. *Item E* — Cleared runway width in metres, if less than published width; if offset left or right of centre line, add (without space) “L” or “R”, as viewed from the threshold having the lower runway designation number.
 7. *Item F* — Deposit over total runway length as explained in SNOWTAM Format. Suitable combinations of these numbers may be used to indicate varying conditions over runway segments. If more than one deposit is present on the same portion of the runway, they should be reported in sequence from the top (closest to the sky) to the bottom (closest to the runway). Drifts, depths of deposit appreciably greater than the average values or other significant characteristics of the deposits may be reported under Item T in plain language. The values for each third of the runway shall be separated by an oblique stroke (/), without space between the deposit values and the oblique stroke, for example: 47/47/47.

Note.— Definitions for the various types of snow are given at the end of this Appendix.

8. *Item G* — Mean depth in millimetres deposit for each third of total runway length, or “XX” if not measurable or operationally not significant; the assessment to be made to an accuracy of 20 mm for dry snow, 10 mm for wet snow and 3 mm for slush. The values for each third of the runway shall be separated by an oblique stroke (/), without space between the values and the oblique stroke, for example: 20/20/20.
9. *Item H* — Estimated surface friction on each third of the runway (single digit) in the order from the threshold having the lower runway designation number.

Friction measurement devices can be used as part of the overall runway surface assessment. Some States may have developed procedures for runway surface assessment which may include the use of information obtained from friction measuring devices and the reporting of quantitative values. In such cases, these procedures should be published in the AIP and the reporting made in Item (T) of the SNOWTAM format.

The values for each third of the runway are separated by an oblique stroke (/), without space between the values and the oblique stroke-, for example: 5/5/5.

10. *Item J* — Critical snow banks. If present insert height in centimetres and distance from edge of runway in metres, followed (without space) by left (“L”) or right (“R”) side or both sides (“LR”), as viewed from the threshold having the

lower runway designation number.

11. *Item K* — If runway lights are obscured, insert “YES” followed (without space) by “L”, “R” or both “LR”, as viewed from the threshold having the lower runway designation number.
12. *Item L* — When further clearance will be undertaken, enter length and width of runway or “TOTAL” if runway will be cleared to full dimensions.
13. *Item M* — Enter the anticipated time of completion in UTC.
14. *Item N* — The code (and combination of codes) for Item F may be used to describe taxiway conditions; enter “NO” if no taxiways serving the associated runway are available.
15. *Item P* — If snow banks are higher than 60 cm, enter “YES” followed by the lateral distance parting the snow banks (the distance between) in metres.
16. *Item R* — The code (and combination of codes) for Item F may be used to describe apron conditions; enter “NO” if the apron is unusable.
17. *Item S* — Enter the anticipated time of next observation/measurement in UTC.
18. *Item T* — Describe in plain language any operationally significant information but always report on length of uncleared runway (Item D) and extent of runway contamination (Item F) for each third of the runway (if appropriate) in accordance with the following scale:

RWY CONTAMINATION 10 PER CENT — if 10% or less of runway contaminated
 RWY CONTAMINATION 25 PER CENT — if 11–25% of runway contaminated
 RWY CONTAMINATION 50 PER CENT — if 26–50% of runway contaminated
 RWY CONTAMINATION 100 PER CENT — if 51–100% of runway contaminated.

EXAMPLE OF COMPLETED SNOWTAM FORMAT

GG EHAMZQZX EDDFZQZX EKCHZQZX
 070645 LSZHNYX
 SWLS0149 LSZH 11070700
 (SNOWTAM 0149
 A) LSZH
 B) 11070620 C) 02 D)...P)
 B) 11070600 C) 09 D)...P)
 B) 11070700 C) 12 D)...P)
 R) NO S) 11070920
 T) DEICING

Note.— See the Aeronautical Information Services Manual (Doc 8126) for additional SNOWTAM examples incorporating different runway conditions.

Definitions of the various types of snow

Slush. Water-saturated snow which with a heel-and-toe slap-down motion against the ground will be displaced with a splatter; specific gravity: 0.5 up to 0.8.

Note.— Combinations of ice, snow and/or standing water may, especially when rain, rain and snow, or snow is falling,

produce substances with specific gravities in excess of 0.8. These substances, due to their high water/ice content, will have a transparent rather than a cloudy appearance and, at the higher specific gravities, will be readily distinguishable from slush.
Snow (on the ground).

- a) *Dry snow.* Snow which can be blown if loose or, if compacted by hand, will fall apart again upon release; specific gravity: up to but not including 0.35.
 - b) *Wet snow.* Snow which, if compacted by hand, will stick together and tend to or form a snowball; specific gravity: 0.35 up to but not including 0.5.
 - c) *Compacted snow.* Snow which has been compressed into a solid mass that resists further compression and will hold together or break up into lumps if picked up; specific gravity: 0.5 and over.
-

APPENDIX 5. ASHTAM FORMAT

(see Chapter 5, 5.2.5.)

(COM heading)	(PRIORITY INDICATOR)	(ADDRESSEE INDICATOR(S)) ¹																		
	(DATE AND TIME OF FILING)								(ORIGINATOR'S INDICATOR)											
(Abbreviated heading)	(VA* ² SERIAL NUMBER)								(LOCATION INDICATOR)			DATE/TIME OF ISSUANCE						(OPTIONAL GROUP)		
	V	A	*2	*2																

ASHTAM	(SERIAL NUMBER)
(FLIGHT INFORMATION REGION AFFECTED)	A)
(DATE/TIME (UTC) OF ERUPTION)	B)
(VOLCANO NAME AND NUMBER)	C)
(VOLCANO LATITUDE/LONGITUDE OR VOLCANO RADIAL AND DISTANCE FROM NAVAID)	D)
(VOLCANO LEVEL OF ALERT COLOUR CODE, INCLUDING ANY PRIOR LEVEL OF ALERT COLOUR CODE) ³	E)
(EXISTENCE AND HORIZONTAL/VERTICAL EXTENT OF VOLCANIC ASH CLOUD) ⁴	F)
(DIRECTION OF MOVEMENT OF ASH CLOUD) ⁴	G)
(AIR ROUTES OR PORTIONS OF AIR ROUTES AND FLIGHT LEVELS AFFECTED)	H)
(CLOSURE OF AIRSPACE AND/OR AIR ROUTES OR PORTIONS OF AIR ROUTES, AND ALTERNATIVE AIR ROUTES AVAILABLE)	I)
(SOURCE OF INFORMATION)	J)
(PLAIN-LANGUAGE REMARKS)	K)
NOTES: 1. See also Appendix 5 regarding addressee indicators used in predetermined distribution systems. 2. *Enter ICAO nationality letter as given in ICAO Doc 7910, Part 2. 3. See paragraph 3.5 below. 4. Advice on the existence, extent and movement of volcanic ash cloud G) and H) may be obtained from the Volcanic Ash Advisory Centre(s) responsible for the FIR concerned. 5. Item titles in brackets () not to be transmitted.	

SIGNATURE OF ORIGINATOR (not for transmission)

INSTRUCTIONS FOR THE COMPLETION OF THE ASHTAM FORMAT

1. General

1.1 The ASHTAM provides information on the status of activity of a volcano when a change in its activity is, or is expected to be of operational significance. This information is provided using the volcano level of alert colour code given in 3.5 below.

1.2 In the event of a volcanic eruption producing ash cloud of operational significance, the ASHTAM also provides information on the location, extent and movement of the ash cloud and the air routes and flight levels affected.

1.3 Issuance of an ASHTAM giving information on a volcanic eruption, in accordance with section 3 below, should **not** be delayed until complete information A) to K) is available but should be issued immediately following receipt of notification that an eruption has occurred or is expected to occur, or a change in the status of activity of a volcano of operational significance has occurred or is expected to occur, or an ash cloud is reported. In the case of an expected eruption, and hence no ash cloud evident at that time, items A) to E) should be completed and items F) to I) indicated as “not applicable”. Similarly, if a volcanic ash cloud is reported, e.g. by special air-report, but the source volcano is not known at that time, the ASHTAM should be issued initially with items A) to E) indicated as “unknown”, and items F) to K) completed, as necessary, based on the special air-report, pending receipt of further information. In other circumstances, if information for a specific field A) to K) is not available indicate “NIL”.

1.4 The maximum period of validity of ASHTAM is 24 hours. New ASHTAM shall be issued whenever there is a change in the level of alert.

2. Abbreviated heading

2.1 Following the usual AFTN communications header, the abbreviated heading “TT AAiiii CCCC MMYYGggg (BBB)” is included to facilitate the automatic processing of ASHTAM messages in computer data banks. The explanation of these symbols is:

TT = data designator for ASHTAM = VA;

AA = geographical designator for States, e.g. NZ = New Zealand (see *Location Indicators* (Doc 7910), Part 2, Index to Nationality Letters for Location Indicators);

iiii = ASHTAM serial number in a four-figure group;

CCCC = four-letter location indicator of the flight information region concerned (see *Location Indicators* (Doc 7910), Part 5, addresses of centres in charge of FIR/UIR);

MMYYGggg = date/time of report, whereby:

MM = month, e.g. January = 01, December = 12

YY = day of the month

GGgg = time in hours (GG) and minutes (gg) UTC;

(BBB) = Optional group for correction to an ASHTAM message previously disseminated with the same serial number = COR.

Note.— Brackets in (BBB) are used to indicate that this group is optional.

Example: Abbreviated heading of ASHTAM for Auckland Oceanic FIR, report on 7 November at 0620 UTC:

VANZ0001 NZZO 11070620

3. Content of ASHTAM

3.1 *Item A* — Flight information region affected, plain-language equivalent of the location indicator given in the abbreviated heading, in this example “Auckland Oceanic FIR”.

3.2 *Item B* — Date and time (UTC) of first eruption.

3.3 *Item C* — Name of volcano, and number of volcano as listed in the ICAO *Manual on Volcanic Ash, Radioactive Material and Toxic Chemical Clouds* (Doc 9691), Appendix H, and on the World Map of Volcanoes and Principal Aeronautical Features.

3.4 *Item D* — Latitude/Longitude of the volcano in whole degrees or radial and distance of volcano from NAVAID (as listed in the ICAO *Manual on Volcanic Ash, Radioactive Material and Toxic Chemical Clouds* (Doc 9691), Appendix H, and on the World Map of Volcanoes and Principal Aeronautical Features).

3.5 *Item E* — Colour code for level of alert indicating volcanic activity, including any previous level of alert colour code as follows:

Level of alert colour code	Status of activity of volcano
GREEN ALERT	Volcano is in normal, non-eruptive state. <i>or, after a change from a higher alert level:</i> Volcanic activity considered to have ceased, and volcano reverted to its normal, non-eruptive state.
YELLOW ALERT	Volcano is experiencing signs of elevated unrest above known background levels. <i>or, after a change from higher alert level:</i> Volcanic activity has decreased significantly but continues to be closely monitored for possible renewed increase.
ORANGE ALERT	Volcano is exhibiting heightened unrest with increased likelihood of eruption. <i>or,</i> Volcanic eruption is underway with no or minor ash emission [<i>specify ash-plume height if possible</i>].
RED ALERT	Eruption is forecasted to be imminent with significant emission of ash into the atmosphere likely. <i>or,</i> Eruption is underway with significant emission of ash into the atmosphere [<i>specify ash-plume height if possible</i>].

Note.— The colour code for the level of alert indicating the status of activity of the volcano and any change from a previous status of activity should be provided to the area control centre by the responsible vulcanological agency in the State concerned, e.g. “RED ALERT FOLLOWING YELLOW” OR “GREEN ALERT FOLLOWING ORANGE”.

3.6 *Item F* — If volcanic ash cloud of operational significance is reported, indicate the horizontal extent and base/top of the ash cloud using latitude/longitude (in whole degrees) and altitudes in thousands of metres (feet) and/or radial and distance from source volcano. Information initially may be based only on special air-report, but subsequent information may be more detailed based on advice from the responsible meteorological watch office and/or volcanic ash advisory centre.

3.7 *Item G* — Indicate forecast direction of movement of the ash cloud at selected levels based on advice from the responsible meteorological watch office and/or volcanic ash advisory centre.

3.8 *Item H* — Indicate air routes and portions of air routes and flight levels affected, or expected to become affected.

3.9 *Item I* — Indicate closure of airspace, air routes or portions of air routes, and availability of alternative routes.

3.10 *Item J* — Source of the information, e.g. “special air-report” or “vulcanological agency”, etc. The source of information should always be indicated, whether an eruption has actually occurred or ash cloud reported, or not.

3.11 *Item K* — Include in plain language any operationally significant information additional to the foregoing.

APPENDIX 6. TERRAIN AND OBSTACLE ATTRIBUTES PROVISION REQUIREMENTS

Table A6-1. Terrain attributes

Terrain attribute	Mandatory/Optional
Area of coverage	Mandatory
Data originator identifier	Mandatory
Data source identifier	Mandatory
Acquisition method	Mandatory
Post spacing	Mandatory
Horizontal reference system	Mandatory
Horizontal resolution	Mandatory
Horizontal accuracy	Mandatory
Horizontal confidence level	Mandatory
Horizontal position	Mandatory
Elevation	Mandatory
Elevation reference	Mandatory
Vertical reference system	Mandatory
Vertical resolution	Mandatory
Vertical accuracy	Mandatory
Vertical confidence level	Mandatory
Surface type	Optional
Recorded surface	Mandatory
Penetration level	Optional
Known variations	Optional
Integrity	Mandatory
Date and time stamp	Mandatory
Unit of measurement used	Mandatory

Table A6-2. Obstacle attributes

Obstacle attribute	Mandatory/Optional
Area of coverage	Mandatory
Data originator identifier	Mandatory
Data source identifier	Mandatory
Obstacle identifier	Mandatory
Horizontal accuracy	Mandatory
Horizontal confidence level	Mandatory
Horizontal position	Mandatory
Horizontal resolution	Mandatory
Horizontal extent	Mandatory
Horizontal reference system	Mandatory
Elevation	Mandatory
Height	Optional
Vertical accuracy	Mandatory
Vertical confidence level	Mandatory
Vertical resolution	Mandatory
Vertical reference system	Mandatory
Obstacle type	Mandatory
Geometry type	Mandatory
Integrity	Mandatory
Date and time stamp	Mandatory
Unit of measurement used	Mandatory
Operations	Optional
Effectivity	Optional
Lighting	Mandatory
Marking	Mandatory

APPENDIX 7. PREDETERMINED DISTRIBUTION SYSTEM FOR NOTAM

(See Chapter 5, 5.3.4.2, and Annex 10, Volume II, Chapter 4, 4.4.14.)

1. The predetermined distribution system provides for incoming NOTAM (including SNOWTAM and ASHTAM) to be channelled through the AFS direct to designated addressees predetermined by the receiving country concerned while concurrently being routed to the international NOTAM office for checking and control purposes.

2. The addressee indicators for those designated addressees are constituted as follows:

1) First and second letters:

The first two letters of the location indicator for the AFS communication centre associated with the relevant international NOTAM office of the receiving country.

2) Third and fourth letters:

The letters “ZZ” indicating a requirement for special distribution.

3) Fifth letter:

The fifth letter differentiating between NOTAM (letter “N”), SNOWTAM (letter “S”), and ASHTAM (letter “V”).

4) Sixth and seventh letters:

The sixth and seventh letters, each taken from the series A to Z and denoting the national and/or international distribution list(s) to be used by the receiving AFS centre.

Note.— The fifth, sixth and seventh letters replace the three-letter designator YNY which, in the normal distribution system, denotes an international NOTAM office.

5) Eighth letter:

The eighth position letter shall be the filler letter “X” to complete the eight-letter addressee indicator.

3. States are to inform the States from which they receive NOTAM of the sixth and seventh letters to be used under different circumstances to ensure proper routing.

APPENDIX 8. TERRAIN AND OBSTACLE DATA REQUIREMENTS

(see Annex 15, Chapter 5)

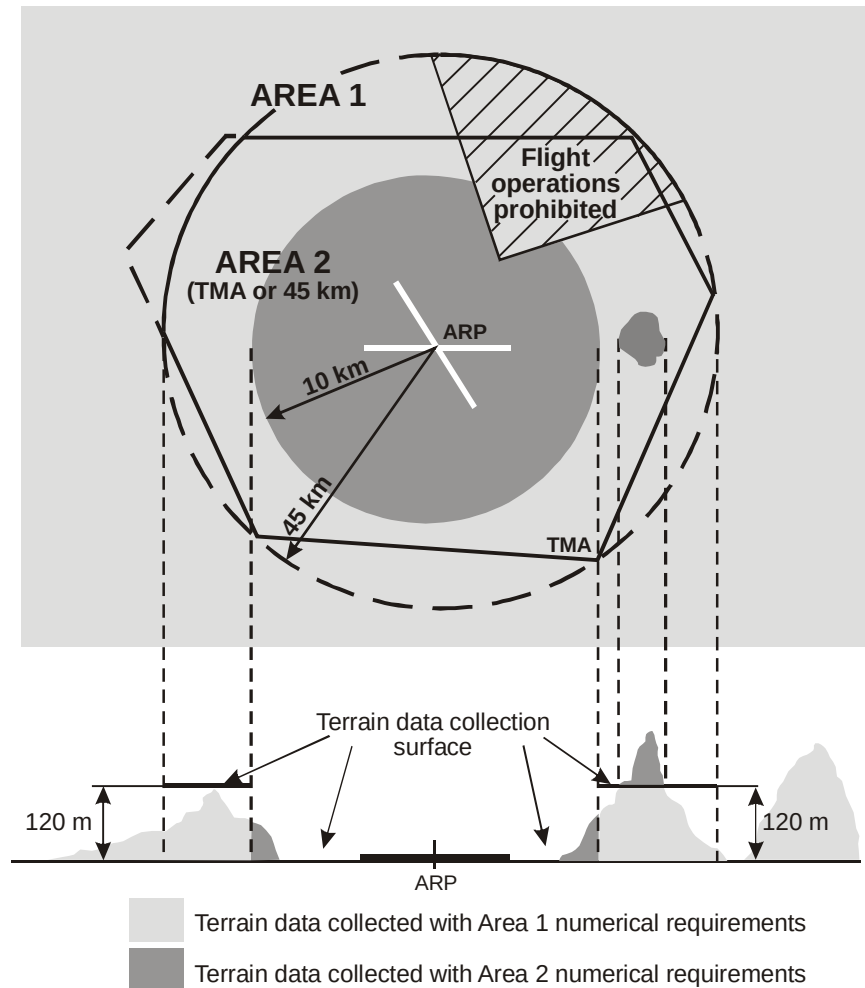


Figure A8-1. Terrain data collection surfaces — Area 1 and Area 2

1. Within the area covered by a 10-km radius from the ARP, terrain data shall comply with the Area 2 numerical requirements.
2. In the area between 10 km and the TMA boundary or 45-km radius (whichever is smaller), data on terrain that penetrates the horizontal plane 120 m above the lowest runway elevation shall comply with the Area 2 numerical requirements.
3. In the area between 10 km and the TMA boundary or 45-km radius (whichever is smaller), data on terrain that does not penetrate the horizontal plane 120 m above the lowest runway elevation shall comply with the Area 1 numerical requirements.
4. In those portions of Area 2 where flight operations are prohibited due to very high terrain or other local restrictions and/or regulations, terrain data shall comply with the Area 1 numerical requirements.

Note.— Terrain data numerical requirements for Areas 1 and 2 are specified in Appendix 1.



-
1. Obstacle data shall be collected and recorded in accordance with the Area 2 numerical requirements specified in Appendix 1.
 2. In those portions of Area 2 where flight operations are prohibited due to very high terrain or other local restrictions and/or regulations, obstacle data shall be collected and recorded in accordance with the Area 1 requirements.
 3. Data on every obstacle within Area 1 whose height above the ground is 100 m or higher shall be collected and recorded in the database in accordance with the Area 1 numerical requirements specified in Appendix 1.

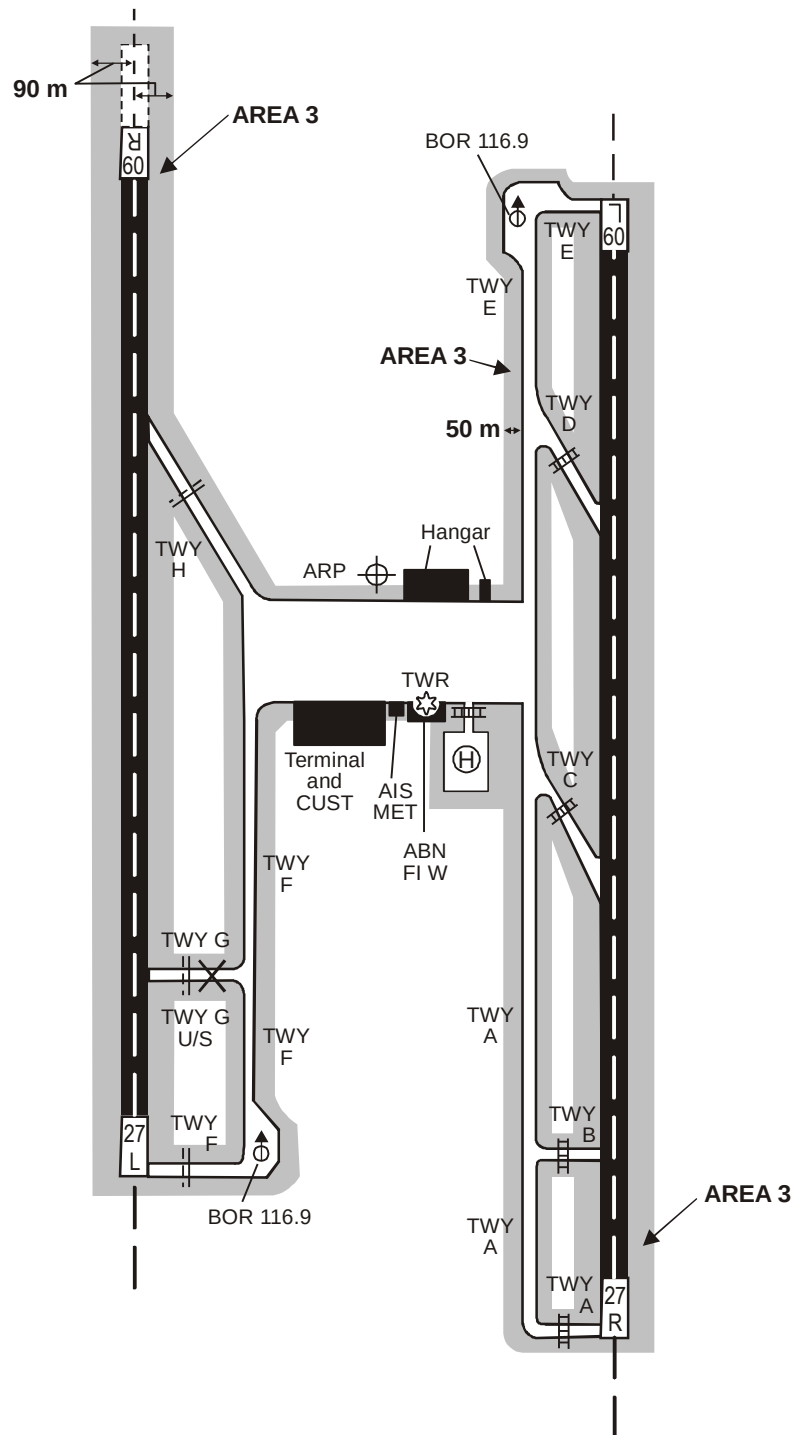


Figure A8-3. Terrain and obstacle data collection surface — Area 3

1. Terrain and obstacle data in Area 3 shall comply with the numerical requirements specified in Appendix 1.

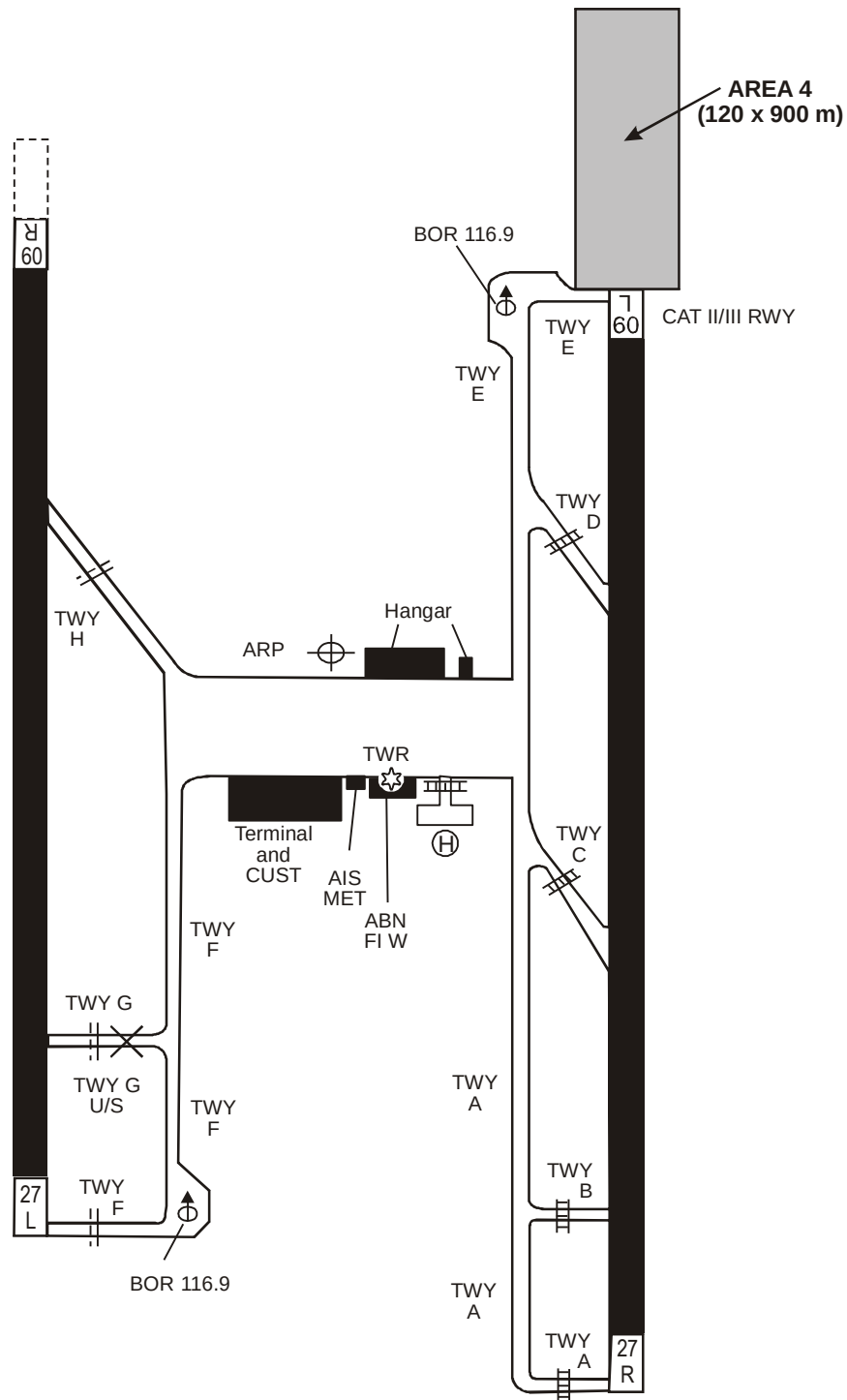


Figure A8-4. Terrain and obstacle data collection surface — Area 4

Terrain and obstacle data in Area 4 shall comply with the numerical requirements specified in Appendix 1.



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Civil Aviation
Organization

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de l'aviation civile
internationale

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de Aviación Civil
Internacional

Международная
организация
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авиации

منظمة الطيران
المدني الدولي

国际民用
航空组织

Tel.: +1 514-954-8219 ext. 6718

Ref.: AN 2/2.4-16/18

1 April 2016

Subject: Adoption of Amendment 39 to Annex 15

Action required: a) Notify any disapproval before 11 July 2016; b) Notify any differences and compliance before 10 October 2016 and 5 October 2020; c) Consider the use of the Electronic Filing of Differences (EFOD) System for notification of differences and compliance

Sir/Madam,

1. I have the honour to inform you that Amendment 39 to the *International Standards and Recommended Practices, Aeronautical Information Services* (Annex 15 to the Convention on International Civil Aviation) was adopted by the Council at the fifth meeting of its 207th Session on 22 February 2016. Copies of the Amendment and the Resolution of Adoption are available as attachments to the electronic version of this State letter on the ICAO-NET (<http://portal.icao.int>) where you can access all other relevant documentation.

2. When adopting the amendment, the Council prescribed 11 July 2016 as the date on which it will become effective, except for any part concerning which a majority of Contracting States have registered their disapproval before that date. In addition, the Council resolved that Amendment 39, to the extent it becomes effective, will become applicable on 10 November 2016¹.

3. Amendment 39 arises from:

- a) recommendations of the third meeting of the Aerodrome Panel (AP/3) relating to the publication of information on runway end safety area (RESA) and arresting system in the aeronautical information publication (AIP);
- b) recommendations of the twelfth meeting of the Instrument Flight Procedures Panel (IFPP/12) relating to en-route airway directional use restrictions;

¹ 5 November 2020 for Amendment 39-B

- c) recommendations of the Friction Task Force of the Aerodrome Design and Operations Panel (ADOP) relating to the use of a global reporting format for assessing and reporting runway surface conditions; and
- d) recommendations of the second meeting of the Operational Data Link Panel (OPLINKP/2) relating to performance-based communication and surveillance (PBCS) and satellite voice communications (SATVOICE).

4. The amendment concerning publication of RESA and arresting system is a consequential amendment to enhance safety of aerodrome operations in Annex 14 — *Aerodromes*, Volume I — *Aerodrome Design and Operations*. The proposed amendment requires data concerning arresting system to be measured, described and promulgated in addition to information related to runway end safety area.

5. The amendment arising from IFPP/12 clarifies requirements with respect to en-route airway directional use restrictions. Conflicting information in ICAO provisions has led to confusion on how it is depicted in State AIPs. The amendment to Annex 15 along with consequential amendments to Annex 4 — *Aeronautical Charts* and the *Aeronautical Information Services Manual* (Doc 8126) will resolve this issue and present the necessary changes to remove any confusion.

6. The amendment concerning PBCS is a consequential amendment to support provisions for PBCS in Annex 11 — *Air Traffic Services* regarding prescription of required communication performance (RCP)/required surveillance performance (RSP) specification(s). The proposed amendment is to ensure that RCP and/or RSP specifications are listed in a standardized format in a State's AIP. The amendment concerning SATVOICE includes a provision in the AIP for SATVOICE number(s) so that they are easily accessible to the flight operations personnel.

7. The amendment concerning enhanced global reporting format for assessing and reporting runway surface conditions is designed to report runway surface conditions in a standardized manner such that flight crew are able to accurately determine aeroplane take-off and landing performance, resulting in a global reduction in runway excursion incidents/accidents. The proposal provides a solution to a long outstanding issue of relating aeroplane performance to runway state information in a more objective way. The amendment is part of a major revision to several Annexes.

8. The subject is given in the amendment to the Foreword of Annex 15, a copy of which is in Attachment A.

9. In conformity with the Resolution of Adoption, may I request:

- a) that before 11 July 2016 you inform me if there is any part of the adopted Standards and Recommended Practices (SARPs) amendments in Amendment 39 (i.e., Amendments 39-A and 39-B) concerning which your Government wishes to register disapproval, using the form in Attachment B for this purpose. Please note that only statements of disapproval need be registered and if you do not reply it will be assumed that you do not disapprove of the amendment;
- b) that before 10 October 2016² you inform me of the following, using the Electronic Filing of Differences (EFOD) System or the form in Attachment C for this purpose:

² 5 October 2020 for Amendment 39-B

- 1) any differences that will exist on 10 November 2016³ between the national regulations or practices of your Government and the provisions of the whole of Annex 15, as amended by all amendments up to and including Amendment 39, and thereafter of any further differences that may arise; and
- 2) the date or dates by which your Government will have complied with the provisions of the whole of Annex 15, as amended by all amendments up to and including Amendment 39.

10. With reference to the request in paragraph 9 a) above, it should be noted that a registration of disapproval of Amendment 39 or any part of it in accordance with Article 90 of the Convention does not constitute a notification of differences under Article 38 of the Convention. To comply with the latter provision, a separate statement is necessary if any differences do exist, as requested in paragraph 9 b) 1). It is recalled in this respect that international Standards in Annexes have a conditional binding force, to the extent that the State or States concerned have not notified any difference thereto under Article 38 of the Convention.

11. With reference to the request in paragraph 9 b) above, it should be also noted that the ICAO Assembly, at its 38th Session (24 September to 4 October 2013) resolved that Member States should be encouraged to use the EFOD System when notifying differences (Resolution A38-11 refers). The EFOD System is currently available on the Universal Safety Oversight Audit Programme (USOAP) restricted website (<http://www.icao.int/usoap>) which is accessible by all Member States. You are invited to consider using this for notification of compliance and differences.

12. Guidance on the determination and reporting of differences is given in the Note on the Notification of Differences in Attachment D. Please note that a detailed repetition of previously notified differences, if they continue to apply, may be avoided by stating the current validity of such differences.

13. I would appreciate it if you would also send a copy of your notifications, referred to in paragraph 9 b) above, to the ICAO Regional Office accredited to your Government.

14. At the fifth meeting of its 204th Session, the Council requested that States, when being advised of the adoption of an Annex amendment, be provided with information on implementation and available guidance material, as well as an impact assessment. This is presented for your information in Attachments E and F, respectively.

15. As soon as practicable after the amendment becomes effective, on 11 July 2016, replacement pages incorporating Amendment 39 (i.e., Amendments 39-A and 39-B) will be forwarded to you.

16. Please note that Amendment 39-B concerning the use of a global reporting format for assessing and reporting runway surface conditions has an applicability date of 5 November 2020. It should be noted that the time between the effective date and the applicability date is longer than usual due to the nature and complexity of the proposal.

³ 5 November 2020 for Amendment 39-B

Accept, Sir/Madam, the assurances of my highest consideration.



Fang Liu

Secretary General

Enclosures:

- A — Amendment to the Foreword of Annex 15
- B — Form on notification of disapproval of all or part of Amendment 39 to Annex 15
- C — Form on notification of compliance with or differences from Annex 15, Amendment 39
- D — Note on the Notification of Differences
- E — Implementation task list and outline of guidance material in relation to Amendment 39 to Annex 15
- F — Impact assessment in relation to Amendment 39 to Annex 15

ATTACHMENT A to State letter AN 2/2.4-16/18

AMENDMENT TO THE FOREWORD OF ANNEX 15

Add the following at the end of Table A:

<i>Amendment</i>	<i>Source(s)</i>	<i>Subject</i>	<i>Adopted/Approved Effective Applicable</i>
39-A	Third meeting of the Aerodrome Panel (AP/3); Twelfth meeting of the Instrument Flight Procedures Panel (IFPP/12); Second meeting of the Operational Data Link Panel (OPLINKP/2)	Amendment concerning: a) publication of information on runway end safety area (RESA) and arresting system in the aeronautical information publication (AIP); b) en-route airway directional use restrictions; and c) performance-based communication and surveillance (PBCS) and satellite voice communications (SATVOICE)	22 February 2016 11 July 2016 10 November 2016

<i>Amendment</i>	<i>Source(s)</i>	<i>Subject</i>	<i>Adopted/Approved Effective Applicable</i>
39-B	Friction Task Force of the Aerodrome Design and Operations Panel (ADOP)	Amendment concerning the use of a global reporting format for assessing and reporting runway surface conditions	22 February 2016 11 July 2016 5 November 2020

**NOTIFICATION OF DISAPPROVAL OF ALL OR PART OF
AMENDMENT 39 TO ANNEX 15**

To: The Secretary General
International Civil Aviation Organization
999 Robert-Bourassa Boulevard
Montreal, Quebec
Canada H3C 5H7

(State) _____ hereby wishes to disapprove the following parts of
Amendment 39 to Annex 15:

Signature _____

Date _____

NOTES

- 1) If you wish to disapprove all or part of Amendment 39 to Annex 15, please dispatch this notification of disapproval to reach ICAO Headquarters by 11 July 2016. If it has not been received by that date it will be assumed that you do not disapprove of the amendment. **If you approve of all parts of Amendment 39, it is not necessary to return this notification of disapproval.**
- 2) This notification should not be considered a notification of compliance with or differences from Annex 15. Separate notifications on this are necessary. (See Attachment C.)
- 3) Please use extra sheets as required.

ATTACHMENT C to State letter AN 2/2.4-16/18

**NOTIFICATION OF COMPLIANCE WITH OR DIFFERENCES FROM ANNEX 15
(including all amendments up to and including Amendment 39)**

To: The Secretary General
International Civil Aviation Organization
999 Robert-Bourassa Boulevard
Montréal, Québec
Canada H3C 5H7

1. No differences will exist on _____ between the national regulations and/or practices of **(State)** _____ and the provisions of Annex 15, including all amendments up to and including Amendment 39.

2. The following differences will exist on _____ between the regulations and/or practices of **(State)** _____ and the provisions of Annex 15, including Amendment 39 (Please see Note 2) below.)

a) Annex Provision	b) Details of Difference	c) Remarks
(Please give exact paragraph reference)	(Please describe the difference clearly and concisely)	(Please indicate reasons for the difference)

(Please use extra sheets as required)

3. By the dates indicated below, **(State)** _____ will have complied with the provisions of Annex 15, including all amendments up to and including Amendment 39 for which differences have been notified in 2 above.

a)	Annex Provision (Please give exact paragraph reference)	b)	Date	c)	Comments

(Please use extra sheets as required)

Signature _____

Date _____

NOTES

- 1) If paragraph 1 above is applicable to your State, please complete paragraph 1 and return this form to ICAO Headquarters. If paragraph 2 is applicable to you, please complete paragraphs 2 and 3 and return the form to ICAO Headquarters.
- 2) A detailed repetition of previously notified differences, if they continue to apply, may be avoided by stating the current validity of such differences.
- 3) Guidance on the notification of differences is provided in the Note on the Notification of Differences and in the *Manual on Notification and Publication of Differences* (Doc 10055).
- 4) Please send a copy of this notification to the ICAO Regional Office accredited to your Government.

ATTACHMENT D to State letter AN 2/2.4-16/18

NOTE ON THE NOTIFICATION OF DIFFERENCES
(Prepared and issued in accordance with instructions of the Council)

1. *Introduction*

1.1 Article 38 of the *Convention on International Civil Aviation* (“Convention”) requires that a Contracting State notify ICAO any time it does not comply with a Standard in all respects, it does not bring its regulations or practices into full accord with any Standard, or it adopts regulations or practices differing in any particular respect from the Standard.

1.2 The Assembly and the Council, when reviewing the notification of differences by Contracting States in compliance with Article 38 of the Convention, have repeatedly noted that the timeliness and currency of such notifications is not entirely satisfactory. Therefore, this note is issued to reiterate the primary purpose of Article 38 of the Convention and to facilitate the determination and notification of differences.

1.3 The primary purpose of the notification of differences is to promote safety, regularity and efficiency in air navigation by ensuring that governmental and other agencies, including operators and service providers, concerned with international civil aviation are made aware of all national regulations and practices in so far as they differ from those prescribed in the Standards contained in Annexes to the Convention.

1.4 Contracting States are, therefore, requested to give particular attention to the notification of differences with respect to Standards in all Annexes, as described in paragraph 4 b) 1) of the Resolution of Adoption.

1.5 Although differences from Recommended Practices are not notifiable under Article 38 of the Convention, the Assembly has urged Contracting States to extend the above considerations to Recommended Practices contained in Annexes to the Convention, as well.

2. *Notification of differences from Standards and Recommended Practices (SARPs)*

2.1 Guidance to Contracting States in the notification of differences to Standards and Recommended Practices (SARPs) can only be given in very general terms. Contracting States are further reminded that compliance with SARPs generally extends beyond the issuance of national regulations and requires establishment of practical arrangements for implementation, such as the provision of facilities, personnel and equipment and effective enforcement mechanisms. Contracting States should take those elements into account when determining their compliance and differences. The following categories of differences are provided as a guide in determining whether a notifiable difference exists:

- a) ***A Contracting State’s requirement is more exacting or exceeds a SARP (Category A).*** This category applies when the national regulation and practices are more demanding than the corresponding SARP, or impose an obligation within the scope of the Annex which is not covered by the SARP. This is of particular importance where a Contracting State requires a higher standard which affects the operation of aircraft of other Contracting States in and above its territory;

- b) *A Contracting State's requirement is different in character or the Contracting State has established other means of compliance (Category B)**. This category applies, in particular, when the national regulation and practices are different in character from the corresponding SARP, or when the national regulation and practices differ in principle, type or system from the corresponding SARP, without necessarily imposing an additional obligation; and
- c) *A Contracting State's requirement is less protective, partially implemented or not implemented (Category C)*. This category applies when the national regulation and practices are less protective than the corresponding SARP; when no national regulation has been promulgated to address the corresponding SARP, in whole or in part; or when the Contracting State has not brought its practices into full accord with the corresponding SARP.

These categories do not apply to Not Applicable SARP. Please see the paragraph below.

2.2 **Not Applicable SARP.** When a Contracting State deems a SARP concerning aircraft, operations, equipment, personnel, or air navigation facilities or services to be not applicable to the existing aviation activities of the State, notification of a difference is not required. For example, a Contracting State that is not a State of Design or Manufacture and that does not have any national regulations on the subject, would not be required to notify differences from Annex 8 provisions related to the design and construction of an aircraft.

2.3 **Differences from appendices, tables and figures.** The material comprising a SARP includes not only the SARP itself, but also the appendices, tables and figures associated with the SARP. Therefore, differences from appendices, tables and figures are notifiable under Article 38. In order to file a difference against an appendix, table or figure, States should file a difference against the SARP that makes reference to the appendix, table or figure.

2.4 **Differences from definitions.** Contracting States should notify differences from definitions. The definition of a term used in a SARP does not have independent status but is an essential part of each SARP in which the term is used. Therefore, a difference from the definition of the term may result in there being a difference from any SARP in which the term is used. To this end, Contracting States should take into consideration differences from definitions when determining compliance or differences to SARPs in which the terms are used.

2.5 The notification of differences should be not only to the latest amendment but to the whole Annex, including the amendment. In other words, Contracting States that have already notified differences are requested to provide regular updates of the differences previously notified until the difference no longer exists.

* The expression “different in character or other means of compliance” in b) would be applied to a national regulation and practice which achieve, by other means, the same objective as that of the corresponding SARPs or for other substantive reasons so cannot be classified under a) or c).

2.6 Further guidance on the identification and notification of differences, examples of well-defined differences and examples of model processes and procedures for management of the notification of differences can be found in the *Manual on Notification and Publication of Differences* (Doc 10055).

3. *Form of notification of differences*

3.1 Differences can be notified:

- a) by sending to ICAO Headquarters a form on notification of compliance or differences; or
- b) through the Electronic Filing of Differences (EFOD) System at www.icao.int/usoap.

3.2 When notifying differences, the following information should be provided:

- a) the number of the paragraph or subparagraph which contains the SARP to which the difference relates*;
- b) the reasons why the State does not comply with the SARP, or considers it necessary to adopt different regulations or practices;
- c) a clear and concise description of the difference; and
- d) intentions for future compliance and any date by which your Government plans to confirm compliance with and remove its difference from the SARP for which the difference has been notified.

3.3 The differences notified will be made available to other Contracting States, normally in the terms used by the Contracting State when making the notification. In the interest of making the information as useful as possible, Contracting States are requested to ensure that:

- a) statements be as clear and concise as possible and be confined to essential points;
- b) the provision of extracts from national regulations not be considered as sufficient to satisfy the obligation to notify differences; and
- c) general comments, unclear acronyms and references be avoided.

— — — — —

* This applies only when the notification is made under 3.1 a).

**IMPLEMENTATION TASK LIST AND OUTLINE OF GUIDANCE
MATERIAL IN RELATION TO AMENDMENT 39 TO ANNEX 15**

1. IMPLEMENTATION TASK LIST

**1.1 Essential steps to be followed by a State in order to
implement the proposed amendment**

***Publication of information on runway end safety area (RESA) and
arresting system in the aeronautical information publication (AIP)***

1.1.1 Essential steps to be followed by a State in order to implement the proposed amendment to Annex 15:

- a) identification of the rule-making process necessary to transpose the modified ICAO provisions into the national regulations;
- b) establishment of a national implementation plan that takes into account the modified ICAO provisions;
- c) drafting of the modification to the national regulations and means of compliance;
- d) official adoption of the national regulations and means of compliance;
- e) filing of State differences with ICAO, if necessary;
- f) publication of significant differences in the AIP;
- g) notification to effected aerodromes of the requirement for additional information;
- h) preparation of revised AIP templates by the State authorized AIS; and
- i) updating the formal arrangements between the aerodrome and the AIS (pursuant to Annex 15, paragraph 2.1.5).

En-route airway directional use restrictions

1.1.2 Essential steps to be followed by a State in order to implement the proposed amendment to Annex 15:

- a) identification of the rule-making process necessary to transpose the modified ICAO provisions into the national regulations;
- b) establishment of a national implementation plan that takes into account the modified ICAO provisions;

- c) drafting of the modification to the national regulations and means of compliance;
- d) official adoption of the national regulations and means of compliance;
- e) filing of State differences with ICAO, if necessary;
- f) publication of significant differences in the AIP;
- g) identification of the originator of the information to be included in the AIP and updating the formal arrangements between the aerodrome and the AIS (pursuant to Annex 15, paragraph 2.1.5); and
- h) preparation of revised AIP templates by the State authorized AIS.

Use of an enhanced global reporting format for assessing and reporting runway surface conditions

1.1.3 Essential steps to be followed by a State in order to implement the proposed amendment to Annex 15:

- a) identification of the rule-making process necessary to transpose the modified ICAO provisions into the national regulations;
- b) establishment of a national implementation plan that takes into account the modified ICAO provisions;
- c) drafting of the modification to the national regulations and means of compliance;
- d) official adoption of the national regulations and means of compliance;
- e) filing of State differences with ICAO, if necessary;
- f) publication of significant differences in the AIP;
- g) notification to effected aerodromes of the requirement for additional information;
- h) advanced notification to NOTAM users of an upcoming change in the reporting of runway surface conditions;
- i) revision of the software templates used to format SNOWTAM on the NOTAM circuit by the State authorized AIS; and
- j) updating the formal arrangements between the aerodrome and the AIS (pursuant to Annex 15, paragraph 2.1.5).

***Performance-based communication and surveillance (PBCS)
Satellite voice communications (SATVOICE)***

1.1.4 Essential steps to be followed by a State in order to implement the proposed amendment to Annex 15:

- a) identification of the rule-making process necessary to transpose the modified ICAO provisions into the national regulations;
- b) establishment of a national implementation plan that takes into account the modified ICAO provisions;
- c) drafting of the modification to the national regulations and means of compliance;
- d) official adoption of the national regulations and means of compliance;
- e) filing of State differences with ICAO, if necessary;
- f) publication of significant differences in the AIP;
- g) identification of the originator of the information to be included in the AIP and updating the formal arrangements between the aerodrome and the AIS (pursuant to Annex 15 paragraph 2.1.5); and
- h) preparation of revised AIP templates by the State authorized AIS.

2. STANDARDIZATION PROCESS

2.1 Effective date: 11 July 2016

2.2 Applicability dates: 10 November 2016 for elements concerning en-route direction use restrictions; performance-based communication and surveillance (PBCS); satellite voice communications (SATVOICE); and publication of information on runway end safety area (RESA) and arresting system in the aeronautical information publication (AIP); and 5 November 2020 for the element concerning the use of a global reporting format for assessing and reporting runway surface conditions.

2.3 Embedded applicability date(s): N/A

3. SUPPORTING DOCUMENTATION

3.1 ICAO documentation

Title	Type (PANS/TI/Manual/Cir)	Planned publication date
<i>Aeronautical Information Services Manual</i> (Doc 8126)	Manual	October 2016
<i>Performance-based Communication and Surveillance Manual</i> (Doc 9869)	Manual	November 2016
<i>Satellite Voice Operations Manual</i> (Doc 10038)	Manual	November 2016

3.2 External documentation

Title	External Organization	Publication date
None		

4. IMPLEMENTATION ASSISTANCE TASKS

Type	Regional
Regional workshop on implementation of global reporting format	ICAO Regional Offices

5. UNIVERSAL SAFETY OVERSIGHT AUDIT PROGRAMME (USOAP)

5.1 The content of this paper may require an amendment of the USOAP CMA protocol questions in the area of ANS to assess effective implementation by States. Existing protocol questions may need amendment or new protocol questions may be required. This will be assessed during the next amendment cycle of the protocol questions.

ATTACHMENT F to State letter AN 2/2.4-16/18

**IMPACT ASSESSMENT IN RELATION TO AMENDMENT 39 TO
ANNEX 15**

1. INTRODUCTION

1.1 Amendment 39 to Annex 15 is intended to:

- a) make available information with respect to the presence and dimensions of the runway end safety areas (RESA) including arresting system;
- b) clarify the publication of en-route airway directional use restrictions;
- c) implement revised runway condition reporting;
- d) make available information with respect to performance-based communication and surveillance; and
- e) make available information with respect to satellite voice communications.

2. IMPACT ASSESSMENT

Publication of information on runway end safety area (RESA) and arresting system in the aeronautical information publication (AIP)

2.1 *Safety impact:* Improved information on runway end safety area (RESA) and arresting system will enhance users' situational awareness.

2.2 *Financial impact:* The costs of implementing a change to the publication format of the AIP will be insignificant in the short term and is part of the normal maintenance of the document.

2.3 *Security impact:* No security impact is expected with this proposal.

2.4 *Environmental impact:* No environmental impact is expected with this proposal.

2.5 *Efficiency impact:* No efficiency impact is expected with this proposal.

2.6 *Expected implementation time:* Implementation time will normally be one publication cycle. Once AIS is receiving the information, some additional time may be necessary to adjust software templates used to compile the AIP.

En-route airway directional use restrictions

2.7 *Safety impact:* More transparency with respect to existing Annex 15 requirements will avoid misinterpretation by the users and support an effective implementation of the criteria, resulting in increased safety.

2.8 *Financial impact:* Negligible costs are expected as a result of updating the provisions for both States and industry.

2.9 *Security impact:* No security impact is expected with this proposal.

2.10 *Environmental impact:* No environmental impact is expected with this proposal.

2.11 *Efficiency impact:* No efficiency impact is expected with this proposal.

2.12 *Expected implementation time:* Implementation time will normally be one publication cycle. Once AIS is receiving the information, some additional time may be necessary to adjust software templates used to compile the AIP.

Use of an enhanced global reporting format for assessing and reporting runway surface conditions

2.13 *Safety impact:* Safety will be enhanced due to the improved information provided to support aircraft operations, in particular during inclement weather.

2.14 *Financial impact:* There will be a cost for AIS providers and information users to make changes to automated systems. The actual cost will vary with the nature and age of the systems currently implemented.

2.15 *Security impact:* No security impact is expected with this proposal

2.16 *Environmental impact:* No environmental impact is expected with this proposal.

2.17 *Efficiency impact:* No efficiency impact is expected with this proposal.

2.18 *Expected implementation time:* At least from one to two years.

Performance-based communication and surveillance (PBCS)

2.19 *Safety impact:* Safety will be enhanced due to the improved information provided to support ATM operations.

2.20 *Financial impact:* The costs of implementing a change to the publication format of the AIP will be insignificant in the short term and is part of the normal maintenance of the document.

2.21 *Security impact:* No security impact is expected with this proposal.

2.22 *Environmental impact:* No environmental impact is expected with this proposal.

2.23 *Efficiency impact:* The proposal will have a positive impact on efficiency as it supports the implementation of PBCS which enables more efficient use of the airspace, an increase in user preferred routes, and more efficient and coordinated airborne re-routing.

2.24 *Expected implementation time:* Implementation time will normally be one publication cycle. Once AIS is receiving the information, some additional time may be necessary to adjust software templates used to compile the AIP.

Satellite voice communications (SATVOICE)

2.25 *Safety impact:* Safety will be enhanced due to the improved information provided to support ATM operations.

2.26 *Financial impact:* The costs of implementing a change to the publication format of the AIP will be insignificant in the short term and is part of the normal maintenance of the document.

2.27 *Security impact:* No security impact is expected with this proposal.

2.28 *Environmental impact:* No environmental impact is expected with this proposal.

2.29 *Efficiency impact:* No efficiency impact is expected with this proposal.

2.30 *Expected implementation time:* Implementation time will normally be one publication cycle. Once AIS is receiving the information, some additional time may be necessary to adjust software templates used to compile the AIP.

— END —

AMENDMENT No. 39-A

TO THE

**INTERNATIONAL STANDARDS
AND RECOMMENDED PRACTICES**

AERONAUTICAL INFORMATION SERVICES

ANNEX 15

TO THE CONVENTION ON INTERNATIONAL CIVIL AVIATION

The amendment to Annex 15 contained in this document was adopted by the Council of ICAO on **22 February 2016**. Such parts of this amendment as have not been disapproved by more than half of the total number of Contracting States on or before **11 July 2016** will become effective on that date and will become applicable on **10 November 2016** as specified in the Resolution of Adoption. (State letter AN 2/2.4-16/18 refers.)

FEBRUARY 2016

INTERNATIONAL CIVIL AVIATION ORGANIZATION

AMENDMENT 39 TO THE INTERNATIONAL STANDARDS AND RECOMMENDED PRACTICES

ANNEX 15 — AERONAUTICAL INFORMATION SERVICES

RESOLUTION OF ADOPTION

The Council

Acting in accordance with the Convention on International Civil Aviation, and particularly with the provisions of Articles 37, 54 and 90 thereof,

1. *Hereby adopts* on 22 February 2016 Amendment 39 to the International Standards and Recommended Practices contained in the document entitled *International Standards and Recommended Practices, Aeronautical Information Services* which for convenience is designated Annex 15 to the Convention;
2. *Prescribes* 11 July 2016 as the date upon which the said amendment shall become effective, except for any part thereof in respect of which a majority of the Contracting States have registered their disapproval with the Council before that date;
3. *Resolves* that the said amendment or such parts thereof as have become effective shall become applicable on 10 November 2016¹;
4. *Requests the Secretary General:*
 - a) to notify each Contracting State immediately of the above action and immediately after 11 July 2016 of those parts of the amendment which have become effective;
 - b) to request each Contracting State:
 - 1) to notify the Organization (in accordance with the obligation imposed by Article 38 of the Convention) of the differences that will exist on 10 November 2016¹ between its national regulations or practices and the provisions of the Standards in the Annex as hereby amended, such notification to be made before 10 October 2016², and thereafter to notify the Organization of any further differences that arise;
 - 2) to notify the Organization before 10 October 2016² of the date or dates by which it will have complied with the provisions of the Standards in the Annex as hereby amended;
 - c) to invite each Contracting State to notify additionally any differences between its own practices and those established by the Recommended Practices, following the procedure specified in subparagraph b) above with respect to differences from Standards.

¹ 5 November 2020 for paragraph 1.1 Definitions SNOWTAM; paragraphs 5.2.2, 5.2.3, 7.1.1.2; Appendix 2. SNOWTAM format, Instructions for the Completion of the SNOWTAM format and Example of Completed SNOWTAM Format

² 5 October 2020 for paragraph 1.1 Definitions SNOWTAM; paragraphs 5.2.2, 5.2.3, 7.1.1.2; Appendix 2. SNOWTAM format, Instructions for the Completion of the SNOWTAM format and Example of Completed SNOWTAM Format

NOTES ON THE PRESENTATION OF THE PROPOSED AMENDMENT

The text of the amendment is arranged to show deleted text with a line through it and new text highlighted with grey shading, as shown below:

~~Text to be deleted is shown with a line through it.~~

text to be deleted

New text to be inserted is highlighted with grey shading.

new text to be inserted

~~Text to be deleted is shown with a line through it~~
followed by the replacement text which is highlighted
with grey shading.

new text to replace existing text

**TEXT OF AMENDMENT 39-A TO THE
INTERNATIONAL STANDARDS
AND RECOMMENDED PRACTICES
AERONAUTICAL INFORMATION
SERVICES**

**ANNEX 15
TO THE CONVENTION ON INTERNATIONAL CIVIL AVIATION**

CHAPTER 1. GENERAL

Note 1.— The object of the aeronautical information service (AIS) is to ensure the flow of aeronautical data and aeronautical information necessary for global air traffic management (ATM) system safety, regularity, economy and efficiency in an environmentally sustainable manner. The role and importance of aeronautical data and aeronautical information changed significantly with the implementation of area navigation (RNAV), performance-based navigation (PBN), airborne computer-based navigation systems, performance-based communication (PBC), performance-based surveillance (PBS), and data link systems and satellite voice communications (SATVOICE). Corrupt, erroneous, late, or missing aeronautical data and aeronautical information can potentially affect the safety of air navigation.

...

1.1 Definitions

When the following terms are used in the Standards and Recommended Practices for aeronautical information services, they have the following meanings:

...

Performance-based communication (PBC). Communication based on performance specifications applied to the provision of air traffic services.

Note.— An RCP specification includes communication performance requirements that are allocated to system components in terms of the communication to be provided and associated transaction time, continuity, availability, integrity, safety and functionality needed for the proposed operation in the context of a particular airspace concept.

...

Performance-based surveillance (PBS). Surveillance based on performance specifications applied to the provision of air traffic services.

Note.— An RSP specification includes surveillance performance requirements that are allocated to system components in terms of the surveillance to be provided and associated data delivery time, continuity, availability, integrity, accuracy of the surveillance data, safety and functionality needed for the proposed operation in the context of a particular airspace concept.

...

Required communication performance (RCP) specification. A set of requirements for air traffic service provision and associated ground equipment, aircraft capability, and operations needed to support performance-based communication.

Required surveillance performance (RSP) specification. A set of requirements for air traffic service provision and associated ground equipment, aircraft capability, and operations needed to support performance-based surveillance.

...

APPENDIX 1. CONTENTS OF THE AERONAUTICAL INFORMATION PUBLICATION (AIP) (see Chapter 4)

...

PART 2 — EN-ROUTE (ENR)

...

ENR 2.1 FIR, UIR, TMA and CTA

Detailed description of flight information regions (FIR), upper flight information regions (UIR), and control areas (CTA) (including specific CTA such as TMA), including:

...

4) frequencies, and if applicable SATVOICE number, supplemented by indications for specific purposes; and

...

ENR 3. ATS ROUTES

Note 1.— Bearings, tracks and radials are normally magnetic. In areas of high latitude, where it is determined by the appropriate authority that reference to Magnetic North is impractical, another suitable reference, i.e. True North or Grid North, may be used.

Note 2.— Changeover points established at the midpoint between two radio navigation aids, or at the intersection of the two radials in the case of a route which changes direction between the navigation aids, need not be shown for each route segment if a general statement regarding their existence is made.

Note 3.— Guidance material on the organization of ATS Route publication is contained in the Aeronautical Information Services Manual (Doc 8126).

ENR 3.1 Lower ATS routes

Detailed description of lower ATS routes, including:

- 1) route designator, designation of the required communication performance (RCP) specification(s), navigation specification(s) and/or required surveillance performance (RSP) specification(s) applicable to a specified segment(s), names, coded designators or name-codes and the geographical coordinates in degrees, minutes and seconds of all significant points defining the route including “compulsory” or “on-request” reporting points;
...
- 7) remarks, including an indication of the controlling unit, its operating channel and, if applicable, its logon address, SATVOICE number, and any navigation, RCP and RSP specification(s) limitations.
...

ENR 3.2 Upper ATS routes

Detailed description of upper ATS routes, including:

- 1) route designator, designation of the required communication performance (RCP) specification(s), navigation specification(s) and/or required surveillance performance (RSP) specification(s) applicable to a specified segment(s), names, coded designators or name-codes and the geographical coordinates in degrees, minutes and seconds of all significant points defining the route including “compulsory” or “on-request” reporting points;
...
- 7) remarks, including an indication of the controlling unit, its operating channel and, if applicable, its logon address, SATVOICE number, and any navigation, RCP and RSP specification(s) limitations.
...

ENR 3.3 Area navigation routes

Detailed description of PBN (RNAV and RNP) routes, including:

- 1) route designator, designation of the required communication performance (RCP) specification(s), navigation specification(s) and/or required surveillance performance (RSP) specification(s) applicable to a specified segment(s), names, coded designators or name-codes and the geographical coordinates in degrees, minutes and seconds of all significant points defining the route including “compulsory” or “on-request” reporting points;
...
- 7) remarks, including an indication of the controlling unit, its operating channel and, if applicable, its logon address, SATVOICE number, and any navigation, RCP and RSP specification(s) limitations.
...

ENR 3.4 Helicopter routes

Detailed description of helicopter routes, including:

- 1) route designator, designation of the required communication performance (RCP) specification(s), navigation specification(s) and/or required surveillance performance (RSP) specification(s) applicable to a specified segment(s), names, coded designators or name-codes and the geographical coordinates in degrees, minutes and seconds of all significant points defining the route including “compulsory” or “on-request” reporting points;

...

- 6) remarks, including an indication of the controlling unit, and its operating channel; and, if applicable, its logon address, SATVOICE number, and any navigation, RCP and RSP specification(s) limitations.

...

PART 3 — AERODROMES (AD)

...

AD 2. AERODROMES

...

**** AD 2.12 Runway physical characteristics

Detailed description of runway physical characteristics, for each runway, including:

...

8) dimensions of stopway (if any) to the nearest metre or foot;

9) dimensions of clearway (if any) to the nearest metre or foot;

10) dimensions of strips;

11) dimensions of runway end safety areas;

12) location (which runway end) and description of arresting system (if any);

13) the existence of an obstacle-free zone; and

14) remarks.

...

**** AD 2.18 Air traffic services communication facilities

Detailed description of air traffic services communication facilities established at the aerodrome, including:

- 1) service designation;

- 2) call sign;
- 3) channel(s);
- 4) SATVOICE number(s), if available;
- 5) logon address, as appropriate;
- 6) hours of operation; and
- 7) remarks.

...

— END —

AMENDMENT No. 39-B

TO THE

**INTERNATIONAL STANDARDS
AND RECOMMENDED PRACTICES**

AERONAUTICAL INFORMATION SERVICES

ANNEX 15

TO THE CONVENTION ON INTERNATIONAL CIVIL AVIATION

The amendment to Annex 15 contained in this document was adopted by the Council of ICAO on **22 February 2016**. Such parts of this amendment as have not been disapproved by more than half of the total number of Contracting States on or before **11 July 2016** will become effective on that date and will become applicable on **5 November 2020** as specified in the Resolution of Adoption. (State letter AN 2/2.4-16/18 refers.)

FEBRUARY 2016

INTERNATIONAL CIVIL AVIATION ORGANIZATION

AMENDMENT 39 TO THE INTERNATIONAL STANDARDS AND RECOMMENDED PRACTICES

ANNEX 15 — AERONAUTICAL INFORMATION SERVICES

RESOLUTION OF ADOPTION

The Council

Acting in accordance with the Convention on International Civil Aviation, and particularly with the provisions of Articles 37, 54 and 90 thereof,

1. *Hereby adopts* on 22 February 2016 Amendment 39 to the International Standards and Recommended Practices contained in the document entitled *International Standards and Recommended Practices, Aeronautical Information Services* which for convenience is designated Annex 15 to the Convention;
2. *Prescribes* 11 July 2016 as the date upon which the said amendment shall become effective, except for any part thereof in respect of which a majority of the Contracting States have registered their disapproval with the Council before that date;
3. *Resolves* that the said amendment or such parts thereof as have become effective shall become applicable on 10 November 2016¹;
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 - a) to notify each Contracting State immediately of the above action and immediately after 11 July 2016 of those parts of the amendment which have become effective;
 - b) to request each Contracting State:
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¹ 5 November 2020 for paragraph 1.1 Definitions SNOWTAM; paragraphs 5.2.2, 5.2.3, 7.1.1.2; Appendix 2. SNOWTAM format, Instructions for the Completion of the SNOWTAM format and Example of Completed SNOWTAM Format

² 5 October 2020 for paragraph 1.1 Definitions SNOWTAM; paragraphs 5.2.2, 5.2.3, 7.1.1.2; Appendix 2. SNOWTAM format, Instructions for the Completion of the SNOWTAM format and Example of Completed SNOWTAM Format

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new text to replace existing text

**TEXT OF AMENDMENT 39-B TO THE
INTERNATIONAL STANDARDS
AND RECOMMENDED PRACTICES
AERONAUTICAL INFORMATION SERVICES**

**ANNEX 15
TO THE CONVENTION ON INTERNATIONAL CIVIL AVIATION**

...

SNOWTAM. A special series NOTAM given in a standard format providing a surface condition report notifying the presence or removal cessation of hazardous conditions due to snow, ice, slush, frost, or standing water or water associated with snow, slush and, ice, or frost on the movement area, by means of a specific format.

...

CHAPTER 5. NOTAM

...

5.2 General specifications

...

5.2.2 Text of NOTAM 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.

Note 1.— Detailed guidance material covering NOTAM, SNOWTAM, ASHTAM and PIB production is contained in Doc 8126.

Note 2.— Additional procedures covering the reporting of runway surface conditions is contained in PANS-Aerodromes (Doc 9981).

...

5.2.3 Information concerning snow, slush, ice and standing water on aerodrome/heliport pavements shall, when reported, frost, standing water, or water associated with snow, slush, ice or frost on the movement area shall be disseminated by means of a SNOWTAM, and contain the information in the order shown in the SNOWTAM Format in Appendix 2.

Note.— The origin and order of the information is a result of assessment processes and procedures prescribed in PANS-Aerodromes (Doc 9981).

...

CHAPTER 7. AERONAUTICAL INFORMATION CIRCULARS (AIC)

7.1 Origination

...

7.1.1.2 The snow plan published under AD 1.2.2 of Appendix 1 shall be supplemented by seasonal information, to be issued well in advance of the beginning of each winter — not less than one month before the normal onset of winter conditions — and shall contain information such as that listed below:

- a) a list of aerodromes/heliports where snow, slush, ice or frost clearance is expected to be performed during the coming winter:

...

APPENDIX 2. SNOWTAM FORMAT (see Chapter 5, 5.2.3)

(COM heading)	{PRIORITY INDICATOR}						{ADDRESSES}												<=						
	{DATE AND TIME OF FILING}						{ORIGINATOR'S INDICATOR}																		<=
(Abbreviated heading)	{SWAA* SERIAL NUMBER}						{LOCATION INDICATOR}			DATE-TIME OF OBSERVATION						{OPTIONAL-GROUP}						<=			
	S	W	*	*																					
SNOWTAM		{Serial number}						<=																	
{AERODROME LOCATION INDICATOR}														A)		<=									
{DATE-TIME OF OBSERVATION (Time of completion of measurement in UTC)}														B)		=>									
{RUNWAY DESIGNATOR}														C)		=>									
{CLEARED RUNWAY LENGTH, IF LESS THAN PUBLISHED LENGTH (m)}														D)		=>									
{CLEARED RUNWAY WIDTH, IF LESS THAN PUBLISHED WIDTH (m; if offset left or right of centre line add "L" or "R")}														E)		=>									
{DEPOSITS OVER TOTAL RUNWAY LENGTH (Observed on each third of the runway, starting from threshold having the lower runway designation number) — NIL — CLEAR AND DRY — 1 — DAMP — 2 — WET — 3 — RIME OR FROST COVERED (depth normally less than 1 mm) — 4 — DRY SNOW — 5 — WET SNOW — 6 — SLUSH — 7 — ICE — 8 — COMPACTED OR ROLLED SNOW — 9 — FROZEN RUTS OR RIDGES}														F) .../.../...				=>							
{(MEAN DEPTH (mm) FOR EACH THIRD OF TOTAL RUNWAY LENGTH)														G) .../.../...		=>									
{(ESTIMATED SURFACE FRICTION ON EACH THIRD OF RUNWAY) — ESTIMATED SURFACE FRICTION — GOOD — 5 — MEDIUM/GOOD — 4 — MEDIUM — 3 — MEDIUM/POOR — 2 — POOR — 1 (The intermediate values of "MEDIUM/GOOD" and "MEDIUM/POOR" provide for more precise information in the estimate when conditions are found to be between medium and either good or poor.)														H) .../.../...				=>							
{CRITICAL SNOWBANKS (If present, insert height (cm)/distance from the edge of runway (m) followed by "L", "R" or "LR" if applicable)}														J)		=>									

(RUNWAY LIGHTS (If obscured, insert "YES" followed by "L", "R" or both "LR" if applicable))	K)	→
(FURTHER CLEARANCE (If planned, insert length (m)/width (m) to be cleared or if to full dimensions, insert "TOTAL"))	L)	→
(FURTHER CLEARANCE EXPECTED TO BE COMPLETED BY... (UTC))	M)	→
(TAXIWAY (If no appropriate taxiway is available, insert "NO"))	N)	→
(TAXIWAY SNOWBANKS (If higher than 60 cm, insert "YES" followed by the lateral distance apart, m))	P)	←
(APRON (If unusable insert "NO"))	R)	→
(NEXT PLANNED OBSERVATION/MEASUREMENT IS FOR) (month/day/hour in UTC)	S)	→
(PLAIN LANGUAGE REMARKS (Including contaminant coverage and other operationally significant information, e.g. sanding, de-icing, chemicals))	T)	}<=
NOTES: 1. *Enter ICAO nationality letters as given in ICAO Doc 7910, Part 2. 2. Information on other runways, repeat from B to P. 3. Words in brackets () not to be transmitted.		

SIGNATURE OF ORIGINATOR (not for transmission)

(COM heading)	(PRIORITY INDICATOR)	(ADDRESSES)		<<≡
	(DATE AND TIME OF FILING)	(ORIGINATOR'S INDICATOR)		<<≡
(Abbreviated heading)	(SWAA* SERIAL NUMBER)	(LOCATION INDICATOR)	DATE/TIME OF ASSESSMENT	(OPTIONAL GROUP)
	S W * *			<<≡(
SNOWTAM		(Serial number)	→ <<≡	
Aeroplane performance section				
(AERODROME LOCATION INDICATOR)			M	A) <<≡
(DATE/TIME OF ASSESSMENT (Time of completion of assessment in UTC))			M	B)
(LOWER RUNWAY DESIGNATORS)			M	C)
RUNWAY CONDITION CODE ON EACH THIRD OF RUNWAY (From Runway Condition Assessment Matrix (RCAM) 0, 1, 2, 3, 4, 5 or 6)			M	D) / /
PER CENT COVERAGE CONTAMINANT FOR EACH RUNWAY THIRD			C	E) / /
DEPTH (mm) OF LOOSE CONTAMINANT FOR EACH THIRD OF RUNWAY			C	F) / /
(CONDITION DESCRIPTION OVER TOTAL RUNWAY LENGTH (Observed on each third of the runway, starting from threshold having the lower runway designation number)) COMPACTED SNOW DRY DRY SNOW DRY SNOW ON TOP OF COMPACTED SNOW DRY SNOW ON TOP OF ICE FROST ICE SLUSH STANDING WATER WATER ON TOP OF COMPACTED SNOW WET WET ICE WET SNOW WET SNOW ON TOP OF COMPACTED SNOW WET SNOW ON TOP OF ICE			M	G) / /
(WIDTH OF RUNWAY TO WHICH THE RWYCCs APPLY, IF LESS THAN PUBLISHED WIDTH)			O	H) <<≡
Situational awareness section				
(REDUCED RUNWAY LENGTH, IF LESS THAN PUBLISHED LENGTH (m))			O	I)
DRIFTING SNOW ON THE RUNWAY			O	J)

LOOSE SAND ON THE RUNWAY	☐	K)
CHEMICAL TREATMENT ON RUNWAY	☐	L)
(SNOWBANKS ON THE RUNWAY (If present, distance from runway centreline (m) followed by "L", "R" or "LR" as applicable))	☐	M)
SNOWBANKS ADJACENT TO THE RUNWAY	☐	N)
(SNOWBANKS ON A TAXIWAY (If present, distance from the edge of runway (m) followed by "L", "R" or "LR" as applicable))		O)
(TAXIWAY CONDITIONS)	☐	P)
(APRON CONDITIONS)	☐	R)
(MEASURED FRICTION COEFFICIENT)	☐	S)
(PLAIN-LANGUAGE REMARKS)	☐	T)) <<≡
NOTES: 1. *Enter ICAO nationality letters as given in ICAO Doc 7910, Part 2 or otherwise applicable aerodrome identifier. 2. *Information on other runways, repeat from B to H. 3. *Information in the Situational Awareness section repeated for each runway, taxiway and apron repeat as applicable when reported. 4. *Words in brackets () not to be transmitted.		

SIGNATURE OF ORIGINATOR (not for transmission)

INSTRUCTIONS FOR THE COMPLETION OF THE SNOWTAM FORMAT

Note.— Origin of data, assessment process and the procedures linked to the surface conditions reporting system are prescribed in the PANS-Aerodromes (Doc 9981).

1. General

- a) When reporting on more than one runway, repeat Items B to ~~P inclusive~~ H (the Aeroplane performance section).
- b) ~~Items together with their indicator must be dropped completely, where no information is to be included.~~ The letters used to indicate items are only used for reference purpose and should not be included in the messages. The letters, M (mandatory) C (conditional) and O (optional) mark the usage and information shall be included as explained below.
- c) Metric units ~~must~~ shall be used and the unit of measurement not reported.
- d) The maximum validity of SNOWTAM is ~~24~~ 8 hours. New SNOWTAM ~~must~~ shall be issued whenever ~~there is a significant change in conditions. The following changes relating to runway conditions are considered as significant:~~ a new runway condition report is received.
 - 1) ~~a change in the coefficient of friction of about 0.05;~~
 - 2) ~~changes in depth of deposit greater than the following: 20 mm for dry snow, 10 mm for wet snow, 3 mm for slush;~~
 - 3) ~~a change in the available length or width of a runway of 10 per cent or more;~~
 - 4) ~~any change in the type of deposit or extent of coverage which requires reclassification in Items F or T of the SNOWTAM;~~

~~5) when critical snow banks exist on one or both sides of the runway, any change in the height or distance from centre line;~~

~~6) any change in the conspicuity of runway lighting caused by obscuring of the lights;~~

~~7) any other conditions known to be significant according to experience or local circumstances.~~

e) A SNOWTAM cancels the previous SNOWTAM.

e-f) The abbreviated heading “TTAAiiii CCCC MMYYGg (BBB)” is included to facilitate the automatic processing of SNOWTAM messages in computer data banks. The explanation of these symbols is:

TT = data designator for SNOWTAM = SW;

AA = geographical designator for States, e.g. LF = FRANCE, EG = United Kingdom (see *Location Indicators* (Doc 7910), Part 2, Index to Nationality Letters for Location Indicators);

iiii = SNOWTAM serial number in a four-digit group;

CCCC = four-letter location indicator of the aerodrome to which the SNOWTAM refers (see *Location Indicators* (Doc 7910));

MMYYGg = date/time of observation/measurement, whereby:

MM = month, e.g. January = 01, December = 12

YY = day of the month

Gg = time in hours (GG) and minutes (gg) UTC;

(BBB) = optional group for:

Correction, in the case of an error, to SNOWTAM message previously disseminated with the same serial number = COR.

Note 1.— Brackets in (BBB) are used to indicate that this group is optional.

Note 2.— When reporting on more than one runway and individual dates/times of observation/measurement are indicated by repeated Item B, the latest date/time of observation/measuring is inserted in the abbreviated heading (MMYYGg).

Example: Abbreviated heading of SNOWTAM No. 149 from Zurich, measurement/observation of 7 November at 0620 UTC:

SWLS0149 LSZH 11070620

Note.— The information groups are separated by a space, as illustrated above.

~~f) The text “SNOWTAM” in the SNOWTAM Format and the SNOWTAM serial number in a four-digit group shall be separated by a space, for example: SNOWTAM 0124.~~

g) For readability purposes for the SNOWTAM message, include a line feed after the SNOWTAM serial number, after Item A, after the last item referring to the runway (e.g. Item P) and after Item S and after the aeroplane performance section.

h) When reporting on more than one runway, repeat the information in the Aeroplane performance calculation section from the Date and Time of Assessment for each runway before the information in the Situational awareness section.

i) Mandatory information is:

- i) AERODROME LOCATION INDICATOR
- ii) DATE AND TIME OF ASSESSMENT
- iii) LOWER RUNWAY DESIGNATOR NUMBER
- iv) RUNWAY CONDITION CODE FOR EACH RUNWAY THIRD
- v) CONDITION DESCRIPTION FOR EACH RUNWAY THIRD (when runway condition code is reported 1- 5)

~~2. Item A Aerodrome location indicator (four letter location indicator).~~

~~3. Item B Eight figure date/time group giving time of observation as month, day, hour and minute in UTC; this item must always be completed.~~

~~4. Item C Lower runway designator number.~~

~~5. Item D Cleared runway length in metres, if less than published length (see Item T on reporting on part of runway not cleared).~~

~~6. Item E Cleared runway width in metres, if less than published width; if offset left or right of centre line, add (without space) "L" or "R", as viewed from the threshold having the lower runway designation number.~~

~~7. Item F Deposit over total runway length as explained in SNOWTAM Format. Suitable combinations of these numbers may be used to indicate varying conditions over runway segments. If more than one deposit is present on the same portion of the runway, they should be reported in sequence from the top (closest to the sky) to the bottom (closest to the runway). Drifts, depths of deposit appreciably greater than the average values or other significant characteristics of the deposits may be reported under Item T in plain language. The values for each third of the runway shall be separated by an oblique stroke (/), without space between the deposit values and the oblique stroke, for example: 47/47/47.~~

~~— Note. Definitions for the various types of snow are given at the end of this Appendix.~~

~~8. Item G Mean depth in millimetres deposit for each third of total runway length, or "XX" if not measurable or operationally not significant; the assessment to be made to an accuracy of 20 mm for dry snow, 10 mm for wet snow and 3 mm for slush. The values for each third of the runway shall be separated by an oblique stroke (/), without space between the values and the oblique stroke, for example: 20/20/20.~~

~~9. Item H Estimated surface friction on each third of the runway (single digit) in the order from the threshold having the lower runway designation number.~~

~~Friction measurement devices can be used as part of the overall runway surface assessment. Some States may have developed procedures for runway surface assessment which may include the use of information obtained from friction measuring devices and the reporting of quantitative values. In such~~

~~cases, these procedures should be published in the AIP and the reporting made in Item (T) of the SNOWTAM format.~~

~~The values for each third of the runway are separated by an oblique stroke (/), without space between the values and the oblique stroke, for example: 5/5/5.~~

- ~~10. Item J — Critical snow banks. If present insert height in centimetres and distance from edge of runway in metres, followed (without space) by left (“L”) or right (“R”) side or both sides (“LR”), as viewed from the threshold having the lower runway designation number.~~
- ~~11. Item K — If runway lights are obscured, insert “YES” followed (without space) by “L”, “R” or both “LR”, as viewed from the threshold having the lower runway designation number.~~
- ~~12. Item L — When further clearance will be undertaken, enter length and width of runway or “TOTAL” if runway will be cleared to full dimensions.~~
- ~~13. Item M — Enter the anticipated time of completion in UTC.~~
- ~~14. Item N — The code (and combination of codes) for Item F may be used to describe taxiway conditions; enter “NO” if no taxiways serving the associated runway are available.~~
- ~~15. Item P — If snow banks are higher than 60 cm, enter “YES” followed by the lateral distance parting the snow banks (the distance between) in metres.~~
- ~~16. Item R — The code (and combination of codes) for Item F may be used to describe apron conditions; enter “NO” if the apron is unusable.~~
- ~~17. Item S — Enter the anticipated time of next observation/measurement in UTC.~~
- ~~18. Item T — Describe in plain language any operationally significant information but always report on length of uncleared runway (Item D) and extent of runway contamination (Item F) for each third of the runway (if appropriate) in accordance with the following scale:~~

~~RWY CONTAMINATION 10 PER CENT — if 10% or less of runway contaminated
RWY CONTAMINATION 25 PER CENT — if 11–25% of runway contaminated
RWY CONTAMINATION 50 PER CENT — if 26–50% of runway contaminated
RWY CONTAMINATION 100 PER CENT — if 51–100% of runway contaminated.~~

2. *Aeroplane performance calculation section*

Item A — Aerodrome location indicator (4-letter location indicator).

Item B — Date and time of assessment eight-figure date/time group giving time of observation as month, day, hour and minute in UTC.

Item C — Lower runway designator number (nn[L] or nn[C] or nn[R])

Note. — Only one runway designator is inserted for each runway and always the lowest number.

Item D — Runway condition code for each runway third — Only one digit (0, 1, 2, 3, 4, 5 or 6) is inserted for each runway third, separated by an oblique stroke (n/n/n)

Item E — Per cent coverage for each runway third . When provided, insert 25, 50, 75 or 100 for each runway third separated by an oblique stroke ([n]nn/[n]nn/[n]nn).

Note 1.— This information is provided only when the runway condition for each runway third (Item D) has been reported as other than 6 and there is a condition description for each runway third (Item G) that has been reported other than DRY.

Note 2.— When the conditions are not reported, this will be signified by the insertion of “NR” for the appropriate runway third.

Item F — Depth of loose contaminant for each runway third. When provided, insert in millimetres for each runway third separated by an oblique stroke (nn/nn/nn or nnn/nnn/nnn).

Note 1.— This information is only provided for the following contamination types:

Standing water, values to be reported 04, then assessed value. Significant changes 3 mm up to and including 15 mm.

Slush, values to be reported 03, then assessed value. Significant changes 3 mm up to and including 15 mm.

Wet snow, values to be reported 03, then assessed value. Significant changes 5 mm.

Dry snow, values to be reported 03, then assessed value. Significant changes 20 mm.

Note 2.— When the conditions are not reported, this will be signified by the insertion of “NR” for the appropriate runway third.

Item G — Condition description for each third. Insert any of the following condition descriptions for each runway third separated by an oblique stroke.

COMPACTED SNOW

DRY SNOW

DRY SNOW ON TOP OF COMPACTED SNOW

DRY SNOW ON TOP OF ICE

FROST

ICE

SLUSH

STANDING WATER

WATER ON TOP OF COMPACTED SNOW

WET ICE

WET SNOW

WET SNOW ON TOP OF COMPACTED SNOW

WET SNOW ON TOP OF ICE

DRY (only reported when there is no contaminant)

Note.— When the conditions are not reported, this will be signified by the insertion of “NR” for the appropriate runway third.

Item H — Width of RWY to which the RWYCCs apply. Insert the width in metres if less than the published runway width.

3. *Situational awareness section*

Note 1.— Elements in the situational awareness section end with a full stop.

Note 2.— Elements in the situational awareness section for which no information exists, or where the conditional circumstances for publication is not fulfilled, are left out completely.

Item I — Reduced runway length. Insert the applicable runway designator and available length in meters (example: RWY nn [L] or nn [C] or nn [R] REDUCED TO [n]nnn).

Note.— This information is conditional when a NOTAM has been published with a new set of declared distances.

Item J — Drifting snow on the runway. When reported, insert DRIFTING SNOW.

Item K — Loose sand on the runway. When loose sand is reported on the runway, insert the lowest runway designator and with a space “LOOSE SAND” (example: RWY nn or RWY nn[L] or nn[C] or nn[R] LOOSE SAND).

Item L — Chemical treatment on RWY. When chemical treatment has been reported applied, insert the lowest runway designator and with a space “CHEMICALLY TREATED” (example: RWY nn or RWY nn[L] or nn[C] or nn[R] CHEMICALLY TREATED).

Item M — Snow banks on the runway. When critical snow banks are reported present on the runway, insert the runway designator and with a space “SNOWBANK” and with a space left “L” or right “R” or both sides “LR”, followed by the distance in metres from centreline separated by a space FM CL (example: RWY nn or RWY nn[L] or nn[C] or nn[R] SNOWBANK Lnn or Rnn or LRnn FM CL).

Item N — Snow banks on the taxiway. When critical snow banks are present on a taxiway, insert the taxiway designator and with a space “SNOWBANK” and with a space left “L” or right “R” or both sides “LR”, followed by the distance in metres from centreline separated by a space FM CL (example: TWY [nn]n SNOWBANK Lnn or Rnn or LRnn FM CL).

Item O — Snow banks adjacent to the runway. When snow banks are reported present penetrating the height profile in the aerodrome snow plan, insert lowest runway designator and “ADJ SNOWBANKS” (example: RWY nn or RWY nn[L] or nn[C] or nn[R] ADJ SNOWBANKS).

Item P — Taxiway conditions. When taxiway conditions are reported slippery or poor insert taxiway designator followed by a space “POOR”. (example: TWY [n or nn] POOR or ALL TWY POOR).

Item R — Apron conditions. When apron conditions are reported slippery or poor insert apron designator followed by a space “POOR” (example: APRON [nnnn] POOR or ALL APRONS POOR).

Item S — Measured friction coefficient. Where reported, insert the measured friction coefficient and friction measuring device.

Note.— This will only be reported for those States that have an established program of runway friction measurement using State approved friction measuring equipment.

Item T — Plain language remarks.

EXAMPLE OF COMPLETED SNOWTAM FORMAT

~~GG EHAMZQZX EDDFZQZX EKCHZQZX~~
 070645 LSZHNYX
 SWLS0149 LSZH 11070700
 (SNOWTAM 0149
 A) LSZH
 B) 11070620 ————— C) 02 ————— D) ...P)
 B) 11070600 ————— C) 09 ————— D) ...P)
 B) 11070700 ————— C) 12 ————— D) ...P)
 R) NO ————— S) 11070920
 T) DEICING

Example SNOWTAM 1

GG EADBZQZX EADNZQZX EADSZQZX
 070645 EADDYNYX
 SWEA0149 EADD 02170055
 (SNOWTAM 0149
 EADD 02170055 09L 5/5/5 100/100/100 NR/NR/NR WET/WET/WET
)

Example SNOWTAM 2

GG EADBZQZX EADNZQZX EADSZQZX
 070645 EADDYNYX
 SWEA0149 EADD 02170135
 (SNOWTAM 0150
 EADD 02170055 09L 5/5/5 100/100/100 NR/NR/NR WET/WET/WET
 EADD 02170135 09R 5/4/3 100/50/75 NR/06/06 WET/SLUSH/SLUSH
)

Example SNOWTAM 3

GG EADBZQZX EADNZQZX EADSZQZX
 070645 EADDYNYX
 SWEA0149 EADD 02170225
 (SNOWTAM 0151
 EADD 02170055 09L 5/5/5 100/100/100 NR/NR/NR WET/WET/WET
 EADD 02170135 09R 5/4/3 100/50/75 NR/06/06 WET/SLUSH/SLUSH
 EADD 02170225 09C 3/2/1 75/100/100 06/12/12 SLUSH/WET SNOW/WET SNOW
 RWY 09L SNOWBANK R20 FM CL. RWY 09R ADJ SNOWBANKS. TWY B POOR. APRON
 NORTH POOR)

Example SNOWTAM 4

GG EADBZQZX EADNZQZX EADSZQZX
 070645 EADDYNYX
 SWEA0149 EADD 02170345
 (SNOWTAM 0152
 EADD 02170345 09L 5/5/5 100/100/100 NR/NR/NR WET/WET/WET
 EADD 02170134 09R 5/4/3 100/50/75 NR/06/06 WET/SLUSH/SLUSH
 EADD 02170225 09C 3/2/1 75/100/100 06/12/12 SLUSH/WET SNOW/WET SNOW 35
 DRIFTING SNOW. RWY 09L LOOSE SAND. RWY 09R CHEMICALLY TREATED. RWY 09C
 CHEMICALLY TREATED.)

Note.— See the Aeronautical Information Services Manual (Doc 8126) for additional SNOWTAM examples incorporating different runway conditions.

Definitions of the various types of snow

Slush. ~~Water saturated snow which with a heel and toe slap down motion against the ground will be displaced with a splatter; specific gravity: 0.5 up to 0.8.~~

~~————— *Note.*— Combinations of ice, snow and/or standing water may, especially when rain, rain and snow, or snow is falling, produce substances with specific gravities in excess of 0.8. These substances, due to their high water/ice content, will have a transparent rather than a cloudy appearance and, at the higher specific gravities, will be readily distinguishable from slush.~~

Snow (on the ground).

- ~~a) *Dry snow.* Snow which can be blown if loose or, if compacted by hand, will fall apart again upon release; specific gravity: up to but not including 0.35.~~
- ~~b) *Wet snow.* Snow which, if compacted by hand, will stick together and tend to or form a snowball; specific gravity: 0.35 up to but not including 0.5.~~
- ~~c) *Compacted snow.* Snow which has been compressed into a solid mass that resists further compression and will hold together or break up into lumps if picked up; specific gravity: 0.5 and over.~~

—————



International
Civil Aviation
Organization

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de l'aviation civile
internationale

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de Aviación Civil
Internacional

Международная
организация
гражданской
авиации

منظمة الطيران
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航空组织

Tel.: +1 514-954-8219 ext. 6717

Ref.: AN 9/1.3-16/38

11 April 2016

Subject: Adoption of Amendment 59 to Annex 4

Action required: a) Notify any disapproval before 11 July 2016; b) Notify any differences and compliance before 10 October 2016; and c) Consider the use of the Electronic Filing of Differences (EFOD) System for notification of differences and compliance

Sir/Madam,

1. I have the honour to inform you that Amendment 59 to the *International Standards and Recommended Practices, Aeronautical Charts* (Annex 4 to the Convention on International Civil Aviation) was adopted by the Council at the fourth meeting of its 207th Session on 22 February 2016. Copies of the Amendment and the Resolution of Adoption are available as attachments to the electronic version of this State letter on the ICAO-NET (<http://portal.icao.int>) where you can access all other relevant documentation.

2. When adopting the amendment, the Council prescribed 11 July 2016 as the date on which it will become effective, except for any part concerning which a majority of Contracting States have registered their disapproval before that date. In addition, the Council resolved that Amendment 59, to the extent it becomes effective, will become applicable on 10 November 2016.

3. Amendment 59 arises from:

- a) the second meeting of the Operational Data Link Panel (OPLINKP/2); and
- b) the twelfth meeting of the Instrument Flight Procedures Panel (IFPP/12).

4. The amendment concerning satellite voice communications (SATVOICE) is part of a major revision to several Annexes and PANS and introduces a provision on the aeronautical charts for SATVOICE number(s). The readily available information on SATVOICE number(s) assists the flight crew in contacting air traffic services (ATS) units in a more efficient manner, which will have a positive impact on operational safety, particularly during emergency situation.

5. The amendment concerning visual segment surface (VSS) addresses the identification of penetrations of the VSS on aeronautical charts to contribute to improved safety through enhanced situational awareness of potential safety hazards. The update of the provisions relating to publication depiction and functionality requirements of fly-by and fly-over significant points, area minimum altitude (AMA), CAT H procedures and en-route airway directional use restrictions is intended to provide clarity and transparency to existing Annex 4 requirements to avoid misinterpretation by the users and support an effective implementation of the criteria, resulting in increased safety. This amendment to Annex 4 complements revisions to the *Procedures for Air Navigation Services — Aircraft Operations*, Volume II — *Construction of Visual and Instrument Flight Procedures* (Doc 8168, PANS-OPS) and guidance material.

6. The subjects are given in the amendment to the Foreword of Annex 4, a copy of which is in Attachment A.

7. In conformity with the Resolution of Adoption, may I request:

- a) that before 11 July 2016 you inform me if there is any part of the adopted Standards and Recommended Practices (SARPs) amendments in Amendment 59 concerning which your Government wishes to register disapproval, using the form in Attachment B for this purpose. Please note that only statements of disapproval need be registered and if you do not reply it will be assumed that you do not disapprove of the amendment;
- b) that before 10 October 2016 you inform me of the following, using the form in Attachment C for this purpose:
 - 1) any differences that will exist on 10 November 2016 between the national regulations or practices of your Government and the provisions of the whole of Annex 4, as amended by all amendments up to and including Amendment 59, and thereafter of any further differences that may arise; and
 - 2) the date or dates by which your Government will have complied with the provisions of the whole of Annex 4, as amended by all amendments up to and including Amendment 59.

8. With reference to the request in paragraph 7 a) above, it should be noted that a registration of disapproval of Amendment 59 or any part of it in accordance with Article 90 of the Convention does not constitute a notification of differences under Article 38 of the Convention. To comply with the latter provision, a separate statement is necessary if any differences do exist, as requested in paragraph 7 b) 1). It is recalled in this respect that international Standards in Annexes have a conditional binding force, to the extent that the State or States concerned have not notified any difference thereto under Article 38 of the Convention.

9. With reference to the request in paragraph 7 b) above, it should be also noted that the ICAO Assembly, at its 38th Session (24 September to 4 October 2013) resolved that Member States should be encouraged to use the Electronic Filing of Differences (EFOD) System when notifying differences (Resolution A38-11 refers). EFOD is currently available on the Universal Safety Oversight Audit Programme (USOAP) restricted website (<http://www.icao.int/usoap>) which is accessible by all Member States. You are invited to consider using this for notification of compliance and differences.

10. Guidance on the determination and reporting of differences is given in the Note on the Notification of Differences in Attachment D. Please note that a detailed repetition of previously notified differences, if they continue to apply, may be avoided by stating the current validity of such differences.

11. I would appreciate it if you would also send a copy of your notifications, referred to in paragraph 7 b) above, to the ICAO Regional Office accredited to your Government.

12. As soon as practicable after the amendment becomes effective, on 11 July 2016, replacement pages incorporating Amendment 59 will be forwarded to you.

13. At the fifth meeting of its 204th Session, the Council requested that States, when being advised of the adoption of an Annex amendment, be provided with information on implementation and available guidance material, as well as an impact assessment. This is presented for your information in Attachments E and F, respectively.

Accept, Sir/Madam, the assurances of my highest consideration.



Fang Liu
Secretary General

Enclosures:

- A — Amendment to the Foreword of Annex 4
- B — Form on notification of disapproval of all or part of Amendment 59 to Annex 4
- C — Form on notification of compliance with or differences from Annex 4, Amendment 59
- D — Note on the Notification of Differences
- E — Implementation task list and outline of guidance material in relation to Amendment 59 to Annex 4
- F — Impact assessment in relation to Amendment 59 to Annex 4

ATTACHMENT A to State letter AN 9/1.3-16/38

AMENDMENT TO THE FOREWORD OF ANNEX 4

Add the following elements at the end of Table A:

<i>Amendment</i>	<i>Source(s)</i>	<i>Subjects</i>	<i>Adopted/Approved Effective Applicable</i>
59	The second meeting of the Operational Data Link Panel (OPLINKP/2); and the twelfth meeting of the Instrument Flight Procedures Panel (IFPP/12)	Provisions concerning satellite voice communications (SATVOICE); visual segment surface (VSS) penetrations charting requirements; and update of the provisions relating to publication depiction and functionality requirements of fly-by and fly-over significant points, area minimum altitude (AMA), CAT H procedures and en-route airway directional use restrictions.	22 February 2016 11 July 2016 10 November 2016

ATTACHMENT B to State letter AN 9/1.3-16/38

NOTIFICATION OF DISAPPROVAL OF ALL OR PART OF
AMENDMENT 59 TO ANNEX 4

To: The Secretary General
International Civil Aviation Organization
999 Robert-Bourassa Boulevard
Montreal, Quebec
Canada H3C 5H7

(State) _____ hereby wishes to disapprove the following parts of
Amendment 59 to Annex 4:

Signature _____

Date _____

NOTES

- 1) If you wish to disapprove all or part of Amendment 59 to Annex 4, please dispatch this notification of disapproval to reach ICAO Headquarters by 11 July 2016. If it has not been received by that date it will be assumed that you do not disapprove of the amendment. **If you approve of all parts of Amendment 59, it is not necessary to return this notification of disapproval.**
- 2) This notification should not be considered a notification of compliance with or differences from Annex 4. Separate notifications on this are necessary. (See Attachment C.)
- 3) Please use extra sheets as required.

ATTACHMENT C to State letter AN 9/1.3-16/38

NOTIFICATION OF COMPLIANCE WITH OR DIFFERENCES FROM ANNEX 4

(including all amendments up to and including Amendment 59)

To: The Secretary General
International Civil Aviation Organization
999 Robert-Bourassa Boulevard
Montreal, Quebec
Canada H3C 5H7

1. No differences will exist on _____ between the national regulations and/or practices of **(State)** _____ and the provisions of Annex 4, including all amendments up to and including Amendment 59.

2. The following differences will exist on _____ between the regulations and/or practices of **(State)** _____ and the provisions of Annex 4, including Amendment 59 (Please see Note 2) below.)

a) Annex Provision

(Please give exact paragraph reference)

b) Details of Difference

(Please describe the difference clearly and concisely)

c) Remarks

(Please indicate reasons for the difference)

(Please use extra sheets as required)

3. By the dates indicated below, **(State)** _____ will have complied with the provisions of Annex 4 , including all amendments up to and including Amendment 59 for which differences have been notified in 2 above.

a)	Annex Provision	b)	Date	c)	Comments
	(Please give exact paragraph reference)				

(Please use extra sheets as required)

Signature _____

Date _____

NOTES

- 1) If paragraph 1 above is applicable to your State, please complete paragraph 1 and return this form to ICAO Headquarters. If paragraph 2 is applicable to you, please complete paragraphs 2 and 3 and return the form to ICAO Headquarters.
- 2) A detailed repetition of previously notified differences, if they continue to apply, may be avoided by stating the current validity of such differences.
- 3) Guidance on the notification of differences is provided in the Note on the Notification of Differences and in the *Manual on Notification and Publication of Differences* (Doc 10055).
- 4) Please send a copy of this notification to the ICAO Regional Office accredited to your Government.

ATTACHMENT D to State letter AN 9/1.3-16/38

NOTE ON THE NOTIFICATION OF DIFFERENCES
(Prepared and issued in accordance with instructions of the Council)

1. *Introduction*

1.1 Article 38 of the *Convention on International Civil Aviation* (“Convention”) requires that a Contracting State notify ICAO any time it does not comply with a Standard in all respects, it does not bring its regulations or practices into full accord with any Standard, or it adopts regulations or practices differing in any particular respect from the Standard.

1.2 The Assembly and the Council, when reviewing the notification of differences by Contracting States in compliance with Article 38 of the Convention, have repeatedly noted that the timeliness and currency of such notifications is not entirely satisfactory. Therefore, this note is issued to reiterate the primary purpose of Article 38 of the Convention and to facilitate the determination and notification of differences.

1.3 The primary purpose of the notification of differences is to promote safety, regularity and efficiency in air navigation by ensuring that governmental and other agencies, including operators and service providers, concerned with international civil aviation are made aware of all national regulations and practices in so far as they differ from those prescribed in the Standards contained in Annexes to the Convention.

1.4 Contracting States are, therefore, requested to give particular attention to the notification of differences with respect to Standards in all Annexes, as described in paragraph 4 b) 1) of the Resolution of Adoption.

1.5 Although differences from Recommended Practices are not notifiable under Article 38 of the Convention, the Assembly has urged Contracting States to extend the above considerations to Recommended Practices contained in Annexes to the Convention, as well.

2. *Notification of differences from Standards and Recommended Practices (SARPs)*

2.1 Guidance to Contracting States in the notification of differences to Standards and Recommended Practices (SARPs) can only be given in very general terms. Contracting States are further reminded that compliance with SARPs generally extends beyond the issuance of national regulations and requires establishment of practical arrangements for implementation, such as the provision of facilities, personnel and equipment and effective enforcement mechanisms. Contracting States should take those elements into account when determining their compliance and differences. The following categories of differences are provided as a guide in determining whether a notifiable difference exists:

- a) ***A Contracting State’s requirement is more exacting or exceeds a SARP (Category A).*** This category applies when the national regulation and practices are more demanding than the corresponding SARP, or impose an obligation within the scope of the Annex which is not covered by the SARP. This is of particular importance where a Contracting State requires a higher standard which affects the operation of aircraft of other Contracting States in and above its territory;

- b) ***A Contracting State's requirement is different in character or the Contracting State has established other means of compliance (Category B)*.*** This category applies, in particular, when the national regulation and practices are different in character from the corresponding SARP, or when the national regulation and practices differ in principle, type or system from the corresponding SARP, without necessarily imposing an additional obligation; and
- c) ***A Contracting State's requirement is less protective, partially implemented or not implemented (Category C).*** This category applies when the national regulation and practices are less protective than the corresponding SARP; when no national regulation has been promulgated to address the corresponding SARP, in whole or in part; or when the Contracting State has not brought its practices into full accord with the corresponding SARP.

These categories do not apply to Not Applicable SARP. Please see the paragraph below.

2.2 **Not Applicable SARP.** When a Contracting State deems a SARP concerning aircraft, operations, equipment, personnel, or air navigation facilities or services to be not applicable to the existing aviation activities of the State, notification of a difference is not required. For example, a Contracting State that is not a State of Design or Manufacture and that does not have any national regulations on the subject, would not be required to notify differences from Annex 8 provisions related to the design and construction of an aircraft.

2.3 **Differences from appendices, tables and figures.** The material comprising a SARP includes not only the SARP itself, but also the appendices, tables and figures associated with the SARP. Therefore, differences from appendices, tables and figures are notifiable under Article 38. In order to file a difference against an appendix, table or figure, States should file a difference against the SARP that makes reference to the appendix, table or figure.

2.4 **Differences from definitions.** Contracting States should notify differences from definitions. The definition of a term used in a SARP does not have independent status but is an essential part of each SARP in which the term is used. Therefore, a difference from the definition of the term may result in there being a difference from any SARP in which the term is used. To this end, Contracting States should take into consideration differences from definitions when determining compliance or differences to SARPs in which the terms are used.

2.5 The notification of differences should be not only to the latest amendment but to the whole Annex, including the amendment. In other words, Contracting States that have already notified differences are requested to provide regular updates of the differences previously notified until the difference no longer exists.

2.6 Further guidance on the identification and notification of differences, examples of well-defined differences and examples of model processes and procedures for management of the notification of differences can be found in the *Manual on Notification and Publication of Differences* (Doc 10055).

* The expression "different in character or other means of compliance" in b) would be applied to a national regulation and practice which achieve, by other means, the same objective as that of the corresponding SARPs or for other substantive reasons so cannot be classified under a) or c).

3. *Form of notification of differences*

3.1 Differences can be notified:

- a) by sending to ICAO Headquarters a form on notification of compliance or differences;
or
- b) through the Electronic Filing of Differences (EFOD) System at www.icao.int/usoap.

3.2 When notifying differences, the following information should be provided:

- a) the number of the paragraph or subparagraph which contains the SARP to which the difference relates*;
- b) the reasons why the State does not comply with the SARP, or considers it necessary to adopt different regulations or practices;
- c) a clear and concise description of the difference; and
- d) intentions for future compliance and any date by which your Government plans to confirm compliance with and remove its difference from the SARP for which the difference has been notified.

3.3 The differences notified will be made available to other Contracting States, normally in the terms used by the Contracting State when making the notification. In the interest of making the information as useful as possible, Contracting States are requested to ensure that:

- a) statements be as clear and concise as possible and be confined to essential points;
- b) the provision of extracts from national regulations not be considered as sufficient to satisfy the obligation to notify differences; and
- c) general comments, unclear acronyms and references be avoided.

— — — — —

* This applies only when the notification is made under 3.1 a).

ATTACHMENT E to State letter AN 9/1.3-16/38

**IMPLEMENTATION TASK LIST AND OUTLINE OF GUIDANCE
MATERIAL IN RELATION TO AMENDMENT 59 TO ANNEX 4**

1. IMPLEMENTATION TASK LIST

1.1 Essential steps to be followed by a State in order to implement the proposed amendment to Annex 4:

- a) identification of the rule-making process necessary to transpose the modified ICAO provisions into the national regulations;
- b) establishment of a national implementation plan that takes into account the modified ICAO provisions;
- c) drafting of the modification to the national regulations and means of compliance;
- d) official adoption of the national regulations and means of compliance;
- e) filing of State differences with ICAO, if necessary; and
- f) training of operational staff in the use of new provisions.

2. STANDARDIZATION PROCESS

2.1 Effective date: 11 July 2016

2.2 Applicability date: 10 November 2016

2.3 Embedded applicability date(s): N/A

3. SUPPORTING DOCUMENTATION

3.1 ICAO documentation

Title	Type (PANS/TI/Manual/Circ)	Planned publication date
<i>Procedures for Air Navigation Services — Aircraft Operations</i> (PANS-OPS, Doc 8168)	PANS	November 2016
<i>Aeronautical Charting Manual</i> (Doc 8697)	Manual	November 2016
<i>Aeronautical Information Services Manual</i> (Doc 8126)	Manual	November 2016

3.2 **External documentation**

Title	External Organization	Publication date
Nil		

4. **IMPLEMENTATION ASSISTANCE TASKS**

Type	Global	Regional
Broader distribution of the proposed amendment to Annex 4.	Training Centers	Flight Procedures Programme Offices

5. **UNIVERSAL SAFETY OVERSIGHT AUDIT PROGRAMME (USOAP)**

5.1 No changes are envisaged in the Protocol Questions (PQs).

IMPACT ASSESSMENT IN RELATION TO AMENDMENT 59 TO ANNEX 4

1. INTRODUCTION

1.1 Amendment 59 to Annex 4 introduces a provision on the aeronautical charts for SATVOICE number(s), addresses the identification of penetrations of the VSS on aeronautical charts to contribute to improved safety through enhanced situational awareness and is intended to provide clarity to existing requirements so they are easily interpreted by the users.

2. IMPACT ASSESSMENT

2.1 *Safety impact:* The proposed amendment to Annex 4 provides various opportunities for the improvement of operational safety. The readily available information on SATVOICE number(s) assists the flight crew in contacting air traffic services (ATS) units in a more efficient manner, which will have a positive impact on operational safety, particularly during emergency situation. Identifying penetrations of the VSS on aeronautical charts improves operational safety by increasing pilots' situational awareness of a potential safety hazard. More transparency with respect to existing Annex 4 requirements will avoid misinterpretation by the users' and support an effective implementation of the criteria, resulting in increased safety.

2.2 *Financial impact:* The changes to Annex 4 provisions, which include the new requirements for SATVOICE number(s) and for flight procedures with VSS penetrations, will imply costs for both States and industry that stem from the need to update aeronautical charts. However, the costs are considered minimal. Negligible cost is expected as a result of updating the provisions for both States and industry.

2.3 *Security impact:* No security impact is expected with this proposal.

2.4 *Environmental impact:* No environmental impact is expected with this proposal.

2.5 *Efficiency impact:* No efficiency impact is expected with this proposal.

2.6 *Expected implementation time:* The expected implementation time varies depending on the States' status of implementation. Some States have already implemented part of the requirements and taken actions accordingly. For States that have not implemented the requirements, the implementation time will depend on the number of charts that need to be updated.

AMENDMENT No. 59

TO THE

**INTERNATIONAL STANDARDS
AND RECOMMENDED PRACTICES**

AERONAUTICAL CHARTS

ANNEX 4

TO THE CONVENTION ON INTERNATIONAL CIVIL AVIATION

The amendment to Annex 4 contained in this document was adopted by the Council of ICAO on **22 February 2016**. Such parts of this amendment as have not been disapproved by more than half of the total number of Contracting States on or before **11 July 2016** will become effective on that date and will become applicable on **10 November 2016** as specified in the Resolution of Adoption. (State letter AN 9/1.3-16/38 refers.)

FEBRUARY 2016

INTERNATIONAL CIVIL AVIATION ORGANIZATION

**AMENDMENT 59 TO THE INTERNATIONAL STANDARDS AND
RECOMMENDED PRACTICES**

ANNEX 4 — AERONAUTICAL CHARTS

RESOLUTION OF ADOPTION

The Council

Acting in accordance with the Convention on International Civil Aviation, and particularly with the provisions of Articles 37, 54 and 90 thereof,

1. *Hereby adopts* on 22 February 2016 Amendment 59 to the International Standards and Recommended Practices contained in the document entitled *International Standards and Recommended Practices, Aeronautical Charts* which for convenience is designated Annex 4 to the Convention;
2. *Prescribes* 11 July 2016 as the date upon which the said amendment shall become effective, except for any part thereof in respect of which a majority of the Contracting States have registered their disapproval with the Council before that date;
3. *Resolves* that the said amendment or such parts thereof as have become effective shall become applicable on 10 November 2016;
4. *Requests the Secretary General:*
 - a) to notify each Contracting State immediately of the above action and immediately after 11 July 2016 of those parts of the amendment which have become effective;
 - b) to request each Contracting State:
 - 1) to notify the Organization (in accordance with the obligation imposed by Article 38 of the Convention) of the differences that will exist on 10 November 2016 between its national regulations or practices and the provisions of the Standards in the Annex as hereby amended, such notification to be made before 10 October 2016, and thereafter to notify the Organization of any further differences that arise;
 - 2) to notify the Organization before 10 October 2016 of the date or dates by which it will have complied with the provisions of the Standards in the Annex as hereby amended;
 - c) to invite each Contracting State to notify additionally any differences between its own practices and those established by the Recommended Practices, following the procedure specified in subparagraph b) above with respect to differences from Standards.

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**NOTES ON THE PRESENTATION OF THE
AMENDMENT 59 TO ANNEX 4**

The text of the amendment is arranged to show deleted text with a line through it and new text highlighted with grey shading, as shown below:

1. ~~Text to be deleted is shown with a line through it.~~	text to be deleted
2. New text to be inserted is highlighted with grey shading.	new text to be inserted
3. ~~Text to be deleted is shown with a line through it~~ followed by the replacement text which is highlighted with grey shading.	new text to replace existing text

TEXT OF AMENDMENT 59

TO THE

INTERNATIONAL STANDARDS

AND RECOMMENDED PRACTICES

AERONAUTICAL CHARTS

ANNEX 4

TO THE CONVENTION ON INTERNATIONAL CIVIL AVIATION

...

CHAPTER 7. ENROUTE CHART — ICAO

...

7.6 Culture and topography

...

7.6.2 Within each quadrilateral formed by the parallels and meridians, the area minimum altitude shall be shown, except as provided for in 7.6.3.

Note 1.— Quadrilaterals formed by the parallels and meridians normally correspond to the whole degree of latitude and longitude. Regardless of the chart scale being used, the area minimum altitude relates to the consequent quadrilateral.

Note 2. — Refer to the Procedures for Air Navigation — Aircraft Operations (PANS-OPS, Doc 8168), Volume II, Part I, Section 2, Chapter 1, paragraph 1.8 for method for determination of area minimum altitude.

...

7.9 Aeronautical data

...

7.9.3 Air traffic services system

7.9.3.1 Where appropriate, the components of the established air traffic services system shall be shown.

7.9.3.1.1 The components shall include the following:

...

- d) All ATS routes for en-route flight including route designators, the track to the nearest degree in both directions along each segment of the routes and, where established, the designation of the navigation specification(s) including any limitations and the direction of traffic flow;

Note.— Guidance material on the organization of ATS routes for en-route flight publication which may be used to facilitate charting is contained in the Aeronautical Information Services Manual (Doc 8126).

...

- k) communication facilities listed with their channels and, if applicable, logon address and satellite voice communications (SATVOICE) number;

...

CHAPTER 8. AREA CHART — ICAO

...

8.9.3 Area minimum altitudes

Area minimum altitudes shall be shown within quadrilaterals formed by the parallels and meridians.

Note.— Depending on the selected chart scale, quadrilaterals formed by the parallels and meridians normally correspond to the whole degree of latitude and longitude.

Note 1.— Quadrilaterals formed by the parallels and meridians normally correspond to the whole degree of latitude and longitude. Regardless of the chart scale being used, the area minimum altitude relates to the consequent quadrilateral.

Note 2.— Refer to the Procedures for Air Navigation — Aircraft Operations (PANS-OPS, Doc 8168), Volume II, Part I, Section 2, Chapter 1, paragraph 1.8 for method for determination of area minimum altitude.

...

8.9.4 Air traffic services system

8.9.4.1 The components of the established relevant air traffic services system shall be shown.

8.9.4.1.1 The components shall include the following:

...

- o) communication facilities listed with their channels and, if applicable, logon address and SATVOICE number; and

...

CHAPTER 9. STANDARD DEPARTURE CHART — INSTRUMENT (SID) — ICAO

...

9.9.3 Minimum sector altitude

9.9.3.1 The established minimum sector altitude shall be shown with a clear indication of the sector to which it applies.

9.9.3.2 Where the minimum sector altitude has not been established, the chart shall be drawn to scale and area minimum altitudes shall be shown within quadrilaterals formed by the parallels and meridians. Area minimum altitudes shall also be shown in those parts of the chart not covered by the minimum sector altitude.

Note.— Depending on the selected chart scale, quadrilaterals formed by the parallels and meridians normally correspond to the half-degree of latitude and longitude.

Note 1.— Quadrilaterals formed by the parallels and meridians normally correspond to the half degree of latitude and longitude. Regardless of the chart scale being used, the area minimum altitude relates to the consequent quadrilateral.

Note 2.— Refer to the Procedures for Air Navigation — Aircraft Operations (PANS-OPS, Doc 8168), Volume II, Part I, Section 2, Chapter 1, paragraph 1.8 for method for determination of area minimum altitude.

...

9.9.4 Air traffic services system

9.9.4.1 The components of the established relevant air traffic services system shall be shown.

9.9.4.1.1 The components shall comprise the following:

- a) a graphic portrayal of each standard departure route — instrument, including:
 - 1) for departure procedures designed specifically for helicopters the term “CAT H” shall be depicted in the departure chart plan view;
 - 1-2) route designator;

Editorial note.— Renumber subsequent paragraphs accordingly.

...

- j) radio communication procedures, including:
 - 1) call sign(s) of ATS unit(s);
 - 2) frequency and, if applicable, SATVOICE number;

- 3) transponder setting, where appropriate;

...

CHAPTER 10. STANDARD ARRIVAL CHART — INSTRUMENT (STAR) — ICAO

...

10.9.3 Minimum sector altitude

10.9.3.1 The established minimum sector altitude shall be shown with a clear indication of the sector to which it applies.

10.9.3.2 Where the minimum sector altitude has not been established, the chart shall be drawn to scale and area minimum altitudes shall be shown within quadrilaterals formed by the parallels and meridians. Area minimum altitudes shall also be shown in those parts of the chart not covered by the minimum sector altitude.

~~Note.— Depending on the selected chart scale, quadrilaterals formed by the parallels and meridians normally correspond to the half-degree of latitude and longitude.~~

Note 1.— Quadrilaterals formed by the parallels and meridians normally correspond to the half degree of latitude and longitude. Regardless of the chart scale being used, the area minimum altitude relates to the consequent quadrilateral.

Note 2.— Refer to the Procedures for Air Navigation — Aircraft Operations (PANS-OPS, Doc 8168), Volume II, Part I, Section 2, Chapter 1, paragraph 1.8 for method for determination of area minimum altitude.

...

10.9.4 Air traffic services system

10.9.4.1 The components of the established relevant air traffic services system shall be shown.

10.9.4.1.1 The components shall comprise the following:

...

i) radio communication procedures, including:

- 1) call sign(s) of ATS unit(s);
- 2) frequency and, if applicable, SATVOICE number;
- 3) transponder setting, where appropriate;

...

j) an indication of “flyover” significant waypoints; and

- k) for arrival procedures to an instrument approach designed specifically for helicopters the term “CAT H” shall be depicted in the arrival chart plan view.

...

CHAPTER 11. INSTRUMENT APPROACH CHART — ICAO

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11.10 Aeronautical data

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11.10.2 Obstacles

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11.10.2.7 Where an obstacle free zone has not been established for a precision approach runway Category I, this shall be indicated.

11.10.2.8 Obstacles that penetrate the visual segment surface shall be identified on the chart.

Note.— Guidance on the charting of VSS penetrations can be found in the Aeronautical Chart Manual (Doc 8697).

...

11.10.8 Supplementary information

...

11.10.8.8 If the final approach descent gradient/angle for any type of instrument approach procedure exceeds the maximum value specified in the *Procedures for Air Navigation Services — Aircraft Operations* (PANS-OPS, Doc 8168), Volume II, ~~Part I, Section 4, Chapter 5~~, a cautionary note shall be included.

...

CHAPTER 13. AERODROME/HELIPORT CHART — ICAO

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13.6 Aerodrome/heliport data

13.6.1 This chart shall show:

...

- o) relevant communication facilities listed with their channels and, if applicable, logon address and SATVOICE number;

...

APPENDIX 2. ICAO CHART SYMBOLS

...

AIR TRAFFIC SERVICES

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Editorial note.— Replace the section below by the new section as follows:

121	Reporting and fly-by/flyover functionality			On request fly-by	Compulsory fly-by	On request flyover	Compulsory flyover
		VFR reporting point					
		Intersection	INT				
		VORTAC					
		TACAN					
		VOR					
		VOR/DME					
		NDB					
		Waypoint	WPT				

Note.— See 2.4.4 and 2.4.5.

Significant Point Functionality								
		Significant Point Depiction for Conventional Navigation		Significant Point Depiction for Area Navigation				
121	Basic Symbols with functionality	REPORTING FLY-BY/FLY-OVER	On request (N/A)	Compulsory (N/A)	On request fly-by	Compulsory fly-by	On request flyover	Compulsory flyover
		VFR reporting point						
		Intersection INT						
		VORTAC						
		TACAN						
		VOR						
		VOR/OME						
		NDB						
		Waypoint WPT	Not Used	Not Used				

For detail on use and
meaning of these symbols,
refer to paragraph 2.4

...

— END —