



Agenda Item 6: Approval of Amendment 40 to Annex 15 – Aeronautical Information Services and creation of the PANS-AIM

Approval of Amendment 40 to Annex 15

(Presented by the Secretariat)

SUMMARY	
This working paper describes the process of approval of Amendment 40 to Annex 15 - <i>Aeronautical Information Services</i> based on the work of the Aeronautical Information Services (AIS)-Aeronautical Information Management (AIM) Study Group (AIS-AIMSG) and consultations carried out with the States.	
REFERENCES:	
<ul style="list-style-type: none">• Annex 15 - Aeronautical Information Services• State Letter: AN 2/2.1.1-17/22• State Letter: AN 2/2.5-18/22	
ICAO strategic objectives:	<i>A - Safety</i> <i>B - Air navigation capacity and efficiency</i> <i>E - Environmental protection</i>

1. **Introduction**

1.1 On 21 April 2017, the ICAO General Secretariat informed the States through letter AN 2/2.1.1-17/22, that the Air Navigation Commission had carried out a preliminary review of the proposals prepared by the Aeronautical information services (AIS)-Aeronautical information management (AIM) study group (AIS-AIMSG) for the amendment of Annex 15 - *Aeronautical information services*, and the new *Procedures for air navigation services - Aeronautical information management* (PANS-AIM).

1.2 In the aforementioned letter, the ICAO General Secretariat requested States to comment on the proposals for amendment by 21 July 2017. Furthermore, States were informed that the amendment, if approved, would be applicable on 8 November 2018.

1.3 On 3 April 2018, the ICAO General Secretariat, through letter AN 2/2.5-18/22, informed the States of the approval of Amendment 40 to Annex 15 - *Aeronautical Information Services*.

2. Discussion

2.1 The Meeting will note that, after three years of work, the AIS-AIM study group submitted the amendment to Headquarters in late 2015. The amendment was reviewed by the Secretariat, submitted to the ANC for preliminary review in **November 2016** and translated into the 6 languages. **State Letter 2017/22** was sent on **21 April 2017** and responses received before **21 July 2017**. Amendment 40 will become applicable in 2018. This amendment incorporates aeronautical information management (AIM) concepts into the provisions to expedite the transition of the product-based aeronautical information service (AIS) to data-centric AIM.

2.2 Amendment 40 to Annex 15 defines the minimum data scope interoperable digital data exchanges, strengthens the importance of quality controls along the aeronautical data process and supports the integration of modern aeronautical information products (digital data sets) that allow for automatic validation and verification procedures. It also minimises the need for human intervention. Furthermore, it will enable new capabilities to airspace users, consistent with the Global Air Navigation Plan of ICAO.

2.3 The ICAO Council noted that better aeronautical information was essential if we are to have a new integrated and interoperable ATM system that enables air navigation service providers to safely handle more traffic in the same amount of space during the same amount of time. It also noted that this new development was expected to accelerate current transitions toward a global ATM capability that reduces costs and environmental impact while improving access to congested airspace and remote airports in developing countries.

2.4 The Council adopted an effective date of July 2018 for the new Annex 15 changes, and a proposed applicability date of 8 November 2018 was agreed for the related implementation.

2.5 The Meeting could be divided into two groups, regulators and service providers, to analyse the following issues:

Regulators:

- a) Review changes made to Annex 15.
- b) Impact on regulations.
- c) Strategies to regulate the new requirements introduced in Amendment 40.

AIS service providers:

- a) Impact of changes made to Annex 15 on service providers.
- b) Strategies for the implementation of the new requirements introduced by Amendment 40.

2.6 The Meeting should note that the PANS-AIM are part of this AIS/AIM documentation restructuring and that they have been developed in order to introduce procedures, processes, formats, and technical specifications. An AIM data catalogue is being developed for inclusion in Appendix 1 to PANS-AIM. The data catalogue is considered as a reference for all provisions related to the origination and publication of aeronautical data. The data catalogue provides a common language that can be used by data providers/creators and AIS.

2.7 The data catalogue will facilitate formal arrangements between AIS/AIM units and data originators. The data catalogue consolidates the data collected and maintained by the AIS, and is the source of accuracy and integrity requirements for determining and reporting aeronautical data to AIS. It is also the source of resolution and integrity requirements for publication and tracking of products, including

aeronautical data contained in Annex 15. The information sub-domains of the data catalogue are the following:

- a) Aerodromes;
- b) Airspaces;
- c) ATS routes;
- d) Instrument flight procedures;
- e) Navigation aids/systems;
- f) Obstacles;
- g) Geographical information.

2.8 The Meeting must recall the dates for action to be taken by States, as shown below:

- a) report any disapproval before 16 July 2018;
- b) report compliance and differences before 8 October 2018; and
- c) consider the use of the electronic filing of difference (EFOD) system for reporting differences and compliance.

2.9 **Appendix A** contains State Letter AN 2/2.5-18/22 issued by ICAO in this regard.

3. **Suggested action:**

3.1 The Meeting is invited to:

- a) take note of the information provided in this working paper;
- b) review the information contained in Appendix A;
- c) establish two groups to analyse the impact, as indicated in paragraph 2.5; and
- d) take any other action it may deem appropriate.

APPENDIX A

State Letter
AN 2/2.5-18/22

Adoption of Ammendment 40 to
Annex 15



International
Civil Aviation
Organization

Organisation
de l'aviation civile
internationale

Organización
de Aviación Civil
Internacional

Международная
организация
гражданской
авиации

منظمة الطيران
المدني الدولي

国际民用
航空组织

Tel.: +1 514-954-8219 ext. 6048

Ref.: AN 2/2.5-18/22

3 April 2018

Subject: Adoption of Amendment 40 to Annex 15

Action required: a) Notify any disapproval before 16 July 2018; b) Notify any differences and compliance before 8 October 2018¹; 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 40 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 sixth meeting of its 213th Session on 9 March 2018. 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 16 July 2018 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 40, to the extent it becomes effective, will become applicable on 8 November 2018.
3. Amendment 40 arises from:
 - a) recommendations of the twelfth meeting of the Aeronautical Information Services (AIS)-Aeronautical Information Management (AIM) Study Group (AIS-AIMSG/12) regarding the restructure of Annex 15 to facilitate incorporation of AIM requirements and changes to the technical content of Annex 15 to facilitate the transition from AIS to AIM environments; and
 - b) recommendations of the second meeting of the Meteorology Panel (METP/2) regarding a consequential amendment in support of space weather information.

¹ 5 October 2020 for provisions indicating applicability as of 5 November 2020.

4. The amendment presents a major restructuring of Annex 15 in order to facilitate the incorporation of new technical requirements and provisions. The changes are aimed at reorganizing the AIM documentation to ensure high-level requirements are embodied in Annex 15, technical specifications and operating procedures are incorporated into the new *Procedures for Air Navigation Services — Aeronautical Information Management* (PANS-AIM, Doc 10066) and guidance material is developed to support implementation.

5. The technical component of the amendment incorporates the AIM focus into Annex 15 which includes the scope, role and functions of AIM, the products and services within an AIM environment and the associated update mechanisms. The amendment generally encourages the transition from a product-centric AIS to the broader concept of a data-centric and service-oriented management of the aeronautical information. It also provides a revised terminology that better explains the aeronautical data chain and clearly identifies the main functions, the associated responsibilities, accountabilities and formal relations between different identities undertaking activities relating to the provision of aeronautical information in the context of the transition from AIS to AIM.

6. The consequential amendment has been introduced to support the initial implementation of the provision of space weather information in Annex 3— *Meteorological Service for International Air Navigation* to enhance the safety and efficiency of international air navigation consistent with the Global Air Navigation Plan.

7. The subjects are given in the amendment to the Foreword of Annex 15, a copy of which is in Attachment A.

8. In conformity with the Resolution of Adoption, may I request:

- a) that before 16 July 2018 you inform me if there is any part of the adopted Standards and Recommended Practices (SARPs) amendments in Amendment 40 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; and
- b) that before 8 October 2018² you inform me of the following, using the Electronic Filing of Differences (EFOD) System or the form in Attachment C for this purpose:
 - 1) any differences that will exist on 8 November 2018 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 40, 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 40.

9. With reference to the request in paragraph 8 a) above, it should be noted that a registration of disapproval of Amendment 40 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 8 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.

² 5 October 2020 for provisions indicating applicability as of 5 November 2020.

10. With reference to the request in paragraph 8 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.

11. 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.

12. I would appreciate it if you would also send a copy of your notifications, referred to in paragraph 8 b) above, to the ICAO Regional Office accredited to your Government.

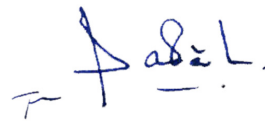
13. At the fifth meeting of its 204th Session, the Council requested that States, when being advised of the adoption of an Annex amendment, be provided with information on implementation and available guidance material, as well as an impact assessment. This is presented for your information in Attachments E and F, respectively.

Editorial adjustment and comprehensive new edition of Annex 15

14. In order to maintain a comprehensive edition of Annex 15, definitions related to provisions with delayed applicability dates are identified by a footnote indicating the date of applicability.

15. In addition, Amendment 39-B (adopted by the Council on 22 February 2016 and applicable 5 November 2020) will be consolidated with Amendment 40 in a new edition of the Annex and will feature the 2020 applicability date at the beginning of each affected provision. Further information relating to the new editorial adjustment is available at <https://www.icao.int/2018-amendments>. As soon as practicable after the amendment becomes effective, on 16 July 2018, a new edition of Annex 15 incorporating Amendment 40 as well as the adopted amendment mentioned above will be forwarded to you.

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 40 to Annex 15
- C — Form on notification of compliance with or differences from Annex 15
- D — Note on the Notification of Differences
- E — Implementation task list and outline of guidance material in relation to Amendment 40 to Annex 15
- F — Impact assessment in relation to Amendment 40 to Annex 15

ATTACHMENT A to State letter AN 2/2.5-18/22

AMENDMENT TO THE FOREWORD OF ANNEX 15

Add the following element at the end of Table A:

<i>Amendment</i>	<i>Source(s)</i>	<i>Subject</i>	<i>Adopted/Approved Effective Applicable</i>
40	Twelfth meeting of the AIS-AIM Study Group (AIS-AIMSG/12); and second meeting of the Meteorology Panel (METP/2)	Amendment concerning: a) restructure of Annex 15 to facilitate incorporation of aeronautical information management (AIM) requirements; b) changes to the technical content of Annex 15 to facilitate the transition from AIS to AIM; and c) a consequential amendment in support of space weather information.	9 March 2018 16 July 2018 8 November 2018

ATTACHMENT B to State letter AN 2/2.5-18/22

**NOTIFICATION OF DISAPPROVAL OF ALL OR PART OF
AMENDMENT 40 TO ANNEX 15**

To: The Secretary General
International Civil Aviation Organization
999 Robert-Bourassa Boulevard
Montréal, Quebec
Canada H3C 5H7

(State) _____ hereby wishes to disapprove the following parts of
Amendment 40 to Annex 15:

Signature _____

Date _____

NOTES

- 1) If you wish to disapprove all or part of Amendment 40 to Annex 15, please dispatch this notification of disapproval to reach ICAO Headquarters by 16 July 2018. 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 40, 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 2/2.5-18/22

**NOTIFICATION OF COMPLIANCE WITH OR DIFFERENCES FROM ANNEX 15
(including all amendments up to and including Amendment 40)**

To: The Secretary General
International Civil Aviation Organization
999 Robert-Bourassa Boulevard
Montréal, Quebec
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 40.

2. The following differences will exist on _____ between the regulations and/or practices of **(State)** _____ and the provisions of Annex 15, including Amendment 40 (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 15, including all amendments up to and including Amendment 40 for which differences have been notified in 2 above.

a) Annex Provision (Please give exact paragraph reference)	b) Date	c) Comments
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(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.

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).

**IMPLEMENTATION TASK LIST AND OUTLINE OF GUIDANCE MATERIAL
IN RELATION TO AMENDMENT 40 TO ANNEX 15**

1. IMPLEMENTATION TASK LIST

1.1 Essential steps to be followed by a State to implement the amendment to Annex 15:

- a) identification of the rule-making process necessary to transpose the new and modified ICAO provisions into national regulations taking into consideration the applicability date;
- b) establishment of a national implementation plan that takes into account the new and modified ICAO provisions;
- c) drafting of the modification(s) 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: 16 July 2018

2.2 Applicability date: 8 November 2018

2.3 Embedded applicability date: 5 November 2020 for those parts of the amendment concerning the SNOWTAM format.

3. SUPPORTING DOCUMENTATION

3.1 ICAO documentation

Title	Type (PANS/TI/Manual/Circ)	Planned publication date
<i>Procedures for Air Navigation Services — Aeronautical Information Management (PANS-AIM, Doc 10066)</i>	PANS (new)	2018
<i>Aeronautical Information Services Manual (Doc 8126)</i>	Manual (update)	2018

3.2 External documentation

Title	External Organization	Publication date
None		

4. **IMPLEMENTATION ASSISTANCE TASKS**

Type	Global	Regional
Workshop/Seminar		AIM regional conferences

5. **UNIVERSAL SAFETY OVERSIGHT AUDIT PROGRAMME (USOAP)**

5.1 The content of this amendment may require an amendment of the USOAP CMA protocol questions (PQs) due to the new technical requirements and change of references. This will be assessed during the next amendment cycle of the PQs.

IMPACT ASSESSMENT IN RELATION TO AMENDMENT 40 TO ANNEX 15

1. INTRODUCTION

1.1 Amendment 40 to Annex 15 presents a major restructuring of the Annex in order to facilitate the incorporation of new technical requirements and provisions which include the definition of the scope of AIM, the role of AIM, the functions of AIM, the products and services within an AIM environment and the associated update mechanisms. The amendment also provides a revised terminology that better explains the aeronautical data chain and clearly identifies the main functions, the associated responsibilities, accountabilities and formal relations between different entities undertaking activities relating to the provision of aeronautical information in the context of the transition from AIS to AIM. Several other updates are provided to the technical requirements including NOTAM distribution improvements to make NOTAM more “fit for purpose”, performance-based data error detection requirements, and data quality characteristics.

1.2 In the new 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 to facilitate the transition to a full AIM environment under the all-embracing system-wide information management (SWIM) principles. Furthermore, material that is too prescriptive, detailed or procedural in nature has been relocated to the PANS-AIM or a guidance document.

2. IMPACT ASSESSMENT

2.1 Amendment concerning the restructure of Annex 15 to facilitate incorporation of AIM requirements

2.1.1 *Safety impact:* Positive safety impact with the implementation of this amendment. The provision of quality-assured, timely and reliable information is becoming crucial for the safety of operations and transitioning to a full AIM environment is an essential enabler to achieve this goal. The restructuring of the AIM provisions ensures that requirements are properly explained and promotes a better understanding of the AIM principles.

2.1.2 *Financial impact:* This amendment will result in minimal overall costs to States and industry. Several requirements currently contained in Annex 15 are moved to the proposed new PANS-AIM and this will imply the need to modify the State regulatory framework in order to properly account for the new references. Additionally the PANS do not carry the status of the Standards and therefore do not come with the obligation imposed by Article 38 of the Convention on International Civil Aviation concerning the notification to ICAO of differences in the event of non-implementation. However, in accordance with the provisions of Annex 15, States are expected to publish in their AIPs up-to-date lists of significant differences between their procedures and the related PANS. This implies the need to update processes to notify or stop notifying differences to ICAO and make sure that significant differences are published in the State AIP.

2.1.3 *Security impact:* No security impact is expected with this amendment.

2.1.4 *Environmental impact:* No environmental impact is expected with this amendment.

2.1.5 *Efficiency impact:* There will be a positive change as the restructuring of the AIM documentation will ensure that requirements are better organized and that provisions properly address the needs of different audiences (e.g. States, service delivery organizations, etc.). This will facilitate the process of retrieving specifications and result in a more efficient application of the requirements and have an indirect positive impact on efficiency in flight.

2.1.6 *Expected implementation time:* The expected implementation time depends on the need to modify the State regulatory framework properly to account for the new Annex 15 and PANS-AIM references and to update processes to notify or stop notifying differences to ICAO and make sure that significant differences are published in the State AIP. Overall, the expected implementation time will be less than one year from the applicability date of the amendment.

2.2 **Amendment concerning changes to the technical content of Annex 15 to facilitate the transition from AIS to AIM**

2.2.1 *Safety impact:* Aeronautical data and information are necessary to ensure the safety, regularity and efficiency of air navigation. The role and importance of complete, timely, and accurate aeronautical data and information has changed significantly with the implementation of area navigation (RNAV), required navigation performance (RNP), airborne computer-based navigation systems, and data link systems. Transitioning to a full AIM environment involves encompassing improved data quality by ensuring that information is provided by accountable and qualified sources. It implies a standard digital data exchange and processing of information and it allows for a timely and accurate distribution of information. Overall, this is reflected in an increased level of safety.

2.2.2 In addition, several operational conditions have been included in Annex 15 to identify when a NOTAM shall or shall not be generated. These inclusions and refinements will promote consistency and serve to refine NOTAM output, thereby increasing the overall level of safety.

2.2.3 *Financial impact:* Transitioning to a full AIM environment may require large investments in equipment and resources, depending on the State's and industry's status of implementation. However, this can be done through a phased approach that facilitates returns of investment, allows lessons learned in early phases to be incorporated in the processes in later phases, and ensures that a solid foundation is available prior to rolling-up more advanced techniques. Additionally, the transition will result in overall economic gains by improving aeronautical information management through a faster, quality-controlled and cost-effective exchange of aeronautical data.

2.2.4 *Security impact:* The existing prescriptive specifications have been amended to introduce more performance-based requirements to maintain data integrity along the data chain. The current stipulation of cyclic redundancy checks is too prescriptive and there have been numerous cases where this has proven to be difficult to demonstrate compliance. Performance-based requirements should facilitate implementation by allowing for use of more modern technology to detect errors in digital data introduced during transmission or storage.

2.2.5 *Environmental impact:* Transitioning from a paper-based to a digital environment will certainly bring environmental benefits.

2.2.6 *Efficiency impact:* Moving towards an AIM environment implies overall benefits in terms of efficiency. For instance, providing data in digital form and complying with digital data exchange requirements represents a paradigm shift in the way information is transmitted and handled along its life

cycle: management, processing, verification, usage, quality control and exchange of information is done in a structured, automatic manner thereby minimizing human intervention and reducing errors.

2.2.7 *Expected implementation time:* The expected implementation time varies depending on the States' current 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 may take two to five years. Most of industry has already implemented many requirements to support the transition to AIM, therefore the expected implementation time would be up to one year depending on the status of implementation.

2.3 **Consequential amendment concerning space weather information**

2.3.1 *Safety impact:* The safety of aircraft operations is enhanced with access to improved information on space weather events.

2.3.2 *Financial impact:* Minimal as it will require minor costs to upgrade software in order to issue NOTAM for space weather events.

2.3.3 *Security impact:* None identified.

2.3.4 *Environmental impact:* None identified.

2.3.5 *Efficiency impact:* The efficiency of aircraft operations is enhanced with improved information about space weather events.

2.3.6 *Expected implementation time:* None. The revised SARP is believed to be consistent with existing State requirements.

— END —

AMENDMENT No. 40

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 **9 March 2018**. Such parts of this amendment as have not been disapproved by more than half of the total number of Contracting States on or before **16 July 2018** will become effective on that date and will become applicable on **8 November 2018** as specified in the Resolution of Adoption. (State letter AN 2/2.5-18/22 refers.)

MARCH 2018

INTERNATIONAL CIVIL AVIATION ORGANIZATION

**AMENDMENT 40 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 9 March 2018 Amendment 40 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* 16 July 2018 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 8 November 2018;
4. *Requests the Secretary General:*
 - a) to notify each Contracting State immediately of the above action and immediately after 16 July 2018 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 8 November 2018 between its national regulations or practices and the provisions of the Standards in the Annex as hereby amended, such notification to be made before 8 October 2018¹, and thereafter to notify the Organization of any further differences that arise;
 - 2) to notify the Organization before 8 October 2018 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, when the notification of such differences is important for the safety of air navigation, following the procedure specified in subparagraph b) above with respect to differences from Standards.

¹ 5 October 2020 for provisions indicating applicability as of 5 November 2020.

**NOTES ON THE PRESENTATION OF THE
AMENDMENT TO ANNEX 15**

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 40

TO THE

INTERNATIONAL STANDARDS
AND RECOMMENDED PRACTICES

AERONAUTICAL INFORMATION SERVICES

ANNEX 15

TO THE CONVENTION ON INTERNATIONAL CIVIL AVIATION

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FOREWORD

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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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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 34.— 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:

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

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

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

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

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

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

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

- Aeronautical Information Publication (AIP), including Amendments and Supplements;
- Aeronautical Information Circulars (AIC);
- Aeronautical charts;
- NOTAM; and
- Digital data sets.

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

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

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

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

AIP Supplement. Temporary changes to the information contained in the AIP which are published 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.

~~**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,

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

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.

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 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 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.

~~**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 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/or from which the AIS organization receives aeronautical data and information.

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

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

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

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

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

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

Note.— An RSP specification includes surveillance performance requirements that are allocated to system components in terms of the surveillance to be provided and associated data

delivery time, continuity, availability, integrity, accuracy of the surveillance data, safety and functionality needed for the proposed operation in the context of a particular airspace concept.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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.

SNOWTAM.^{††} A special series NOTAM given in a standard format providing a surface condition report notifying the presence or cessation of hazardous conditions due to snow, ice, slush, frost, standing water or water associated with snow, slush, ice, or frost on the movement area.

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;*

[†] Applicable until 4 November 2020.

^{††} Applicable as of 5 November 2020.

~~—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.*~~

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.~~

~~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.~~

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 PANS-AIM (Doc 10066), Appendix 1 Annex 14, Volumes I and II, Chapter 2, and Table A5-2 and Table 2 of Appendices 5 and 1, respectively.

~~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.~~

~~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.~~

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~~ **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 aeronautical information products** 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 3.3.

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.— 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~~ and efficiency of air navigation are made available in a form suitable for the operational requirements of the air traffic management (ATM) community, including:

- a) those involved in flight operations, including flight crews, flight planning and flight simulators; and
- b) the 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~~ 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 ~~8.3-5.6~~.

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 ~~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.

~~2.3.2 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 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.~~ **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 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.

~~2.3.2~~ 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.— New 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.

~~2.3.3~~ 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.— New 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.

~~2.3.4~~ 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.— New 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.

~~2.3.5~~ 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);

c) NOTAM; and

d) Aeronautical Charts.

Editorial Note.— New 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.

~~2.3.6~~ **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.

Editorial Note.— New 2.3.7 is relocated text from 2.3.6.

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.

~~2.3.7~~ **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.

Editorial Note.— New 2.3.9 is relocated text from 2.3.7.

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

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

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

Editorial Note.— New 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 aeronautical information product of a State's AIS 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.

Editorial Note.— New 2.4.1 is relocated text from 2.4.

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 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

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.

~~3.3~~ 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.

~~3.3.1~~ 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).

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.*

Editorial Note.— New 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 and Note 1 are relocated to the new edition of Annex 15, 3.3.2.

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 are relocated to the new PANS-AIM, Notes 2 and 4 to 2.1.2.1.

3.3.2 3.2.2 Data Resolution

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

Editorial Note.— New 3.2.2 is relocated text from 3.3.2.1.

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

Note 2.— The resolution of the data ~~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.

3.3.3 3.2.3 Data Integrity

3.3.3.1 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.

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

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

3.3.3.2 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~~ 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.

Editorial Note.— New 3.2.3.2 is relocated text from 3.3.3.2.

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.

~~3.2~~ 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.

~~3.2.1~~ 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~~.

Editorial Note.— New 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.

~~3.2.2~~ 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).*

Editorial Note.— New 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.

~~3.5.1~~ **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 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.

~~3.5.2~~ **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 be used in order to maintain the integrity levels as specified in 3.2.3.

Note.— Detailed specifications concerning digital data error detection techniques are contained in the PANS-AIM (Doc 10066).

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.

3-6 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.

~~3.6.1~~ **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).

Editorial Note.— New 3.5.1 and Note are relocated text from 3.6.1 and Note.

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

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

~~3.6.3~~ 3.5.3 In order to meet the data quality requirements, automation shall:

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

Editorial Note.— New 3.5.3 is relocated text from 3.6.3.

3.7 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.

~~3.7.1~~ 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~~ planned for development by November 2019).

Editorial Note.— New 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.

~~3.7.2~~ **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.— New 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.

~~3.7.3~~ **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.*

Editorial Note.— New 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.

~~3.7.4~~ **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.

Editorial Note.— New 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.

~~3.7.5~~ **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.

Editorial Note.— New 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.

~~3.7.6~~ **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.— New 3.6.6 is relocated text from 3.7.6.

~~3.7.7~~ **3.6.7** All necessary measures shall be taken to monitor compliance with the quality management system in place.

Editorial Note.— New 3.6.7 is relocated text from 3.7.7.

~~3.7.8~~ **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.— New 3.6.8 is relocated text from 3.7.8.

3.8 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.

~~3.8.1~~ **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.— New 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.

~~3.8.2~~ **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.— New 3.7.2 and Note are 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.

~~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. AERONAUTICAL INFORMATION PUBLICATIONS (AIP)

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.— 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 ~~Contents~~ 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 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;
- h) terrain; and

- i) geographic information.

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

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

~~4.1.1.1 **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.

~~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 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.

~~4.1.3 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 General specifications 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.

~~3.4.1 **4.2.1** Metadata shall be collected for aeronautical data processes and exchange points.~~

Editorial Note.— New 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.

~~3.4.1 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).

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

~~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.

~~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 4.3.7 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. NOTAM AERONAUTICAL INFORMATION PRODUCTS AND SERVICES

5.1 Origination 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 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.

5.1.1.1 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.

Editorial Note.— 5.1.1.1 and Note are relocated to the new edition of Annex 15, 6.3.2.3.

~~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.

~~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 l)), 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.— The first sentence of paragraph 5.1.1.6 is relocated to the new edition of Annex 15, 6.3.2.1; the first sentence is also 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.

~~3.6.2~~ 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.— New 5.1.2 is relocated text from paragraph 3.6.2.

5.2 General specifications

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 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.

~~4.6.1~~ 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.

Editorial Note.— New 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 Notes 1 and 2 to 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.

4.1.2 **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.

Editorial Note.— New 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

~~4.4.6 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).

Editorial Note.— New 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)

~~7.1.1.1 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.

Editorial Note.— New 5.2.4.1 relocated text from 7.1.1.1.

~~7.1.1 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.

Editorial Note.— New 5.2.4.2 is relocated text from 7.1.1.

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

~~7.2.5~~ 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).

Editorial Note.— New 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.— Annex 4 provides Standards and Recommended Practices including provision requirements for each chart type.

~~4.1.3~~ 5.2.5.1 The aeronautical charts listed alphabetically below shall, when available for designated international aerodromes/heliports, form part of the AIP, or be ~~distributed~~ provided separately to recipients of the AIP:

- a) Aerodrome/Heliport Chart — ICAO;
- b) Aerodrome Ground Movement Chart — ICAO;
- c) Aerodrome Obstacle Chart — ICAO Type A;
- d) Aerodrome Obstacle Chart — ICAO Type B (when available)
- ~~de~~ e) Aerodrome Terrain and Obstacle Chart — ICAO (Electronic);
- ef) Aircraft Parking/Docking Chart — ICAO;
- fg) Area Chart — ICAO;
- gh) ATC Surveillance Minimum Altitude Chart — ICAO;
- hi) Instrument Approach Chart — ICAO;
- ij) Precision Approach Terrain Chart — ICAO;
- jk) Standard Arrival Chart — Instrument (STAR) — ICAO;
- kl) Standard Departure Chart — Instrument (SID) — ICAO;

4m) 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.— New 5.2.5.1 is relocated text from 4.1.3.

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

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

- a) World Aeronautical Chart — ICAO 1:1 000 000;
- b) Aeronautical Chart — ICAO 1:500 000;
- c) Aeronautical Navigation Chart — ICAO Small Scale;
- d) Plotting Chart — ICAO chart; and
- e) ATC Surveillance Minimum Altitude Chart — ICAO.

5.2.5.4 **Recommendation.**— *Electronic aeronautical charts should be provided based on digital databases and the use of geographic information systems.*

~~1.2.1.4~~ 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 chart resolution of aeronautical data shall be that as specified for a particular chart.

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

~~5.2.5.6~~ 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.— New 5.2.5.5 is relocated text from 1.2.1.4. 5.2.5.6 is deleted.

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

~~5.2.13~~ ~~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).*

Editorial Note. — New 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.

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 Digital data shall be in the form of the following data sets:

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

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

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

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

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

~~5.3.2 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 **Recommendation.**— An AIP data set should be provided covering the extent of information as provided in the AIP.

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

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

~~5.3.3.1 **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.

~~40.1.1~~ 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.

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

~~10.1.2~~ **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

~~10.2.1~~ **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.~~

Editorial Note.— New 5.3.3.3.1 is relocated text from 10.2.1.

~~10.1.3~~ **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.— New 5.3.3.3.2 is relocated text from 10.1.3.

~~10.1.5~~ **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.

Editorial Note.— New 5.3.3.3.3 is relocated text from 10.1.5.

~~10.1.7~~ **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.~~

Editorial Note.— New 5.3.3.3.4 is relocated text from 10.1.7.

- 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.~~

Editorial Note.— Subparagraphs a) and b) are relocated text from Appendix 8, Figure A8-1.

~~10.1.11~~ 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.— New 5.3.3.3.5 is relocated text from 10.1.11.

~~10.1.12~~ 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.~~

Editorial Note.— New 5.3.3.3.6 is relocated text from 10.1.12.

~~10.1.8~~ 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.~~

Editorial Note.— New 5.3.3.3.7 is relocated text from 10.1.8.

~~10.1.9~~ 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.

Editorial Note.— New 5.3.3.3.8 is relocated text from 10.1.9.

~~10.1.10~~ 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.

Editorial Note.— New 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 sets shall contain ~~comprise~~ the digital representation of the vertical and horizontal extent of the obstacles.

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

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.~~

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

10.1.3 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.

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

10.1.4 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.

Editorial Note.— New 5.3.3.4.4 is relocated text from 10.1.4.

10.1.6 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.

Editorial Note.— New 5.3.3.4.5 is relocated text from 10.1.6. Specifically subparagraph a) is relocated text from Appendix 8.

10.1.7 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.

Editorial Note.— New 5.3.3.4.6 is relocated text from 10.1.7. Specifically subparagraphs a), b) and c) are relocated text from Appendix 8.

~~10.1.11~~ **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.— New 5.3.3.4.7 is relocated text from 10.1.11.

~~10.1.12~~ **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.

Editorial Note.— New 5.3.3.4.8 is relocated text from 10.1.12.

~~10.1.8~~ **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.

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

~~10.1.9~~ **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.~~

Editorial Note.— New 5.3.3.4.10 is relocated text from 10.1.9.

~~10.1.10~~ **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.— New 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.

~~11.3.2~~ **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 attribute~~

Editorial Note.— New 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 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

~~5.3.1~~ **5.4.1.1** NOTAM Aeronautical information products shall be distributed to authorized users on the basis of a request who request them.

Editorial Note.— New 5.4.1.1 is relocated text from 5.3.1.

~~4.5~~ **5.4.1.2** AIP, AIP Amendments, and AIP Supplements and AIC shall be made available by the most expeditious means.

Editorial Note.— New 5.4.1.2 is relocated text from 4.5.

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

5.4.2 NOTAM distribution

~~5.3.1~~ **5.4.2.1** NOTAM shall be distributed on the basis of a request.

Editorial Note.— New 5.4.2.1 is relocated text from 5.3.1

~~5.3.2~~ **5.4.2.2** NOTAM shall be prepared in conformity with the relevant provisions of the ICAO communication procedures.

Editorial Note.— New 5.4.2.2 is relocated text from 5.3.2.

~~5.3.2.1~~ 5.4.2.3 The Aeronautical Fixed Service (AFS) shall, whenever practicable, be employed for NOTAM distribution.

Editorial Note.— 5.4.2.3 is relocated text from 5.3.2.1.

~~5.3.2.2~~ 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. ~~5.3.3~~ The originating State shall select the NOTAM that are to be given international distribution.

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

~~5.3.4~~ 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.

Editorial Note.— New 5.4.2.5 is relocated text from 5.3.4.

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

~~5.3.3.1~~ 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).~~

Editorial Note.— New 5.4.2.7 is relocated text from 5.3.3.1.

5.5 Pre-Flight Information Service

~~8.1.1~~ 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.

Editorial Note.— New 5.5.1 is relocated text from 8.1.1.

~~8.1.2~~ 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. ~~I.~~— ~~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.

Editorial Note.— New 5.5.2 is relocated text from 8.1.2.

~~8.1.3~~ **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).

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

5.6. Post-flight information Service

~~8.3.1~~ **5.6.1** For any aerodrome/heliport used for international air operations, ~~A~~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.— New 5.6.1 is relocated text from 8.3.1.

~~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~~ 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.

Editorial Note.— New 5.6.2 is relocated text from 8.3.1.

~~8.3.2~~ **5.6.3** For any aerodrome/heliport used for international air operations, ~~A~~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.~~

Editorial Note.— New 5.6.3 is relocated text from 8.3.2.

~~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~~ 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.

Editorial Note.— New 5.6.4 is relocated text from 8.3.2.

CHAPTER 6. AERONAUTICAL INFORMATION REGULATION AND CONTROL (AIRAC) 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.

~~4.2.9 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.~~

Editorial Note.— New 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 and to the new PANS-AIM 6.1.2.2.

~~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 Provision of information in paper copy form 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.

~~6.1.1 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–November 20108: - 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.— New 6.2.1 is relocated text from 6.1.1.

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

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

~~a)1) flight information regions;~~

~~b)2) control areas;~~

~~e)3) control zones;~~

~~d)4) advisory areas;~~

~~e)5) ATS routes;~~

~~f)6) permanent danger, prohibited and restricted areas (including type and periods of activity when known) and ADIZ;~~

~~g)7) permanent areas or routes or portions thereof where the possibility of interception exists.~~

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

- 1.3c) Holding and approach procedures, arrival and departure procedures, noise abatement procedures and any other pertinent ATS procedures.
- 1.4d) Transition levels, transition altitudes and minimum sector altitudes.
- 1.5e) Meteorological facilities (including broadcasts) and procedures.
- 1.6 f) Runways and stopways
- 1.7g) Taxiways and aprons.
- 1.8h) Aerodrome ground operating procedures (including low visibility procedures).
- 1.9i) Approach and runway lighting.
- 1.10j) 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.

~~6.1.1~~ 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.

Editorial Note.— New 6.2.2 is relocated text from 6.1.1.

~~6.2.1~~ 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 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.~~

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

~~6.1.3~~ 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.— New 6.2.4 is relocated text from 6.1.3.

~~6.1.4~~ **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.— New 6.2.5 is relocated text from 6.1.4.

~~6.1.2~~ **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:*

~~The establishment and withdrawal of, and premeditated significant changes to:~~

- 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.*

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

~~6.2.2~~ **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 made available by the AIS so as to reach recipients ~~with~~ 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.*

Editorial Note.— New 6.2.7 is relocated text from 6.2.2.

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

- ~~3.1~~ a) *New aerodromes for international IFR operations.*
- ~~3.2~~ b) *New runways for IFR operations at international aerodromes.*
- ~~3.3~~ c) *Design and structure of the air traffic services route network.*
- ~~3.4~~ d) *Design and structure of a set of terminal procedures (including change of procedure bearings due to magnetic variation change).*
- ~~3.5~~ 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.*

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 Provision of information as electronic media 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.

6.3.1 AIP updates

~~4.2.9~~ **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.— New 6.3.1.1 is relocated text from 4.2.9 partially.

~~4.3.1~~ **6.3.1.2** Permanent changes to the AIP shall be published as AIP Amendments.

Editorial Note.— New 6.3.1.2 is relocated text from 4.3.1.

~~4.4.1~~ **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.— New 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.

6.3.2 NOTAM

~~5.1.1.6~~ **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).

Editorial Note.— New 6.3.2.1 is relocated text from 5.1.1.6.

~~5.1.1~~ 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.— New 6.3.2.2 is relocated text from 5.1.1.

~~5.1.1.1~~ 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)/ 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;
- ~~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;

- 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;
- no) 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) ~~observations or forecasts of solar cosmic radiation, where provided space weather phenomena, the date and time of their occurrence, the flight levels where provided, and portions of the airspace which may be affected by the phenomena;~~
- 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.

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

Editorial Note.— New 6.3.2.3 is relocated text from 5.1.1.1.

~~5.1.1.3~~ 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 unavailability 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~~ 6.3.2.3 m)), when controlled, at promulgated sites or within danger or prohibited areas;
- i) training activities by ground units;
- j) unavailability of back-up and secondary systems if these do not have an operational impact;
- k) limitations to airport facilities or general services with no operational impact;
- l) national regulations not affecting general aviation;
- m) announcement or warnings about possible/potential limitations, without any operational impact;
- n) general reminders on already published information;
- o) availability of equipment for ground units without containing information on the operational impact for airspace and facility users;
- p) information about laser emissions without any operational impact and fireworks below minimum flying heights;
- q) closure of movement area parts in connection with planned work locally coordinated of duration of less than one hour;
- r) closure, changes, unavailability in operation of aerodrome(s)/heliport(s) outside the aerodrome(s)/heliport(s) operational hours;

is) 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.

Editorial Note.— New 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 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 and the digital data sets shall be synchronized.

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Editorial Note.— Those parts of Chapter 7 which have not been relocated in Annex 15 or new PANS-AIM are deleted.

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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.~~

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Editorial Note.— Those parts of Chapter 8 which do not appear here are relocated to the new edition of Annex 15 or to the new PANS-AIM.

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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).~~

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Editorial Note.— Those parts of Chapter 9 which do not appear here have been relocated to the new edition of Annex 15 or to the new PANS-AIM .

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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.

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Editorial Note.— Those parts of Chapter 10 which do not appear here have been relocated to the new edition of Annex 15 or to the new PANS-AIM .

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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~~

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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.~~

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Editorial Note.— Those parts of Chapter 11 which do not appear here have been relocated to the new edition of Annex 15 or to the new PANS-AIM.

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Editorial Note.— Those parts of Appendices 1 to 8 which have not been relocated in Annex 15 or new PANS-AIM have been deleted.

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