



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

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Ref.: AN 4/1.2.27-18/23

29 March 2018

Subject: Adoption of Amendment 14 to Annex 14,
Volume I

Action required: a) Notify any disapproval before
16 July 2018; b) Notify any differences and compliance
before 8 October 2018; 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 14 to the International Standards and *Recommended Practices, Aerodromes — Aerodrome Design and Operations* (Annex 14, Volume I 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 14, to the extent it becomes effective, will become applicable on 8 November 2018.

3. Amendment 14 arises from:

- a) recommendations of the second meeting of the Aerodrome Design and Operations Panel (ADOP/2) regarding modifications of aerodrome design specifications in Chapters 3 and 4;
- b) recommendation of the thirteenth meeting of the Instrument Flight Procedures Panel (IFPP/13) to update footnote e. in Table 4-1; and

- c) recommendations of the twelfth meeting of the Aeronautical Information Service (AIS) Aeronautical Information Management (AIM) Study Group (AIS AIMSG/12), as a result of the restructuring of Annex 15 and the proposed new PANS-AIM, relating to change of references, data quality requirements and performance-based data error detection requirements.

4. The amendments to the design specifications in Chapters 3 and 4 of Annex 14, Volume I, are a continuation of the principle applied in Amendment 13, which is to eliminate excesses in safety buffers resulting from improved aeroplane capabilities and actual operating safety performances. A balance needs to be achieved between the need for increased capacity and efficiency, and maintaining aviation safety at an acceptable level.

5. The amendment concerning an update to footnote e. in Table 4-1 ensures that footnote e. in Table 4-1 of Annex 14, Volume I is in line with Circular 301, Circular 345 (yet to be published) and the PANS-Aerodromes (Doc 9981).

6. The consequential amendment concerning change of references, data quality requirements and performance-based data error detection requirements resulting from the restructuring of Annex 15 and the proposed new PANS-AIM (Doc 10066) ensures that references are updated accordingly; all aeronautical data quality requirements originally contained in Appendix 5 to Annex 14, Volume I are moved to Appendix 1 of the PANS-AIM (*Aeronautical Data Catalogue*) and references to the *Aeronautical Data Catalogue* are created; performance-based requirements have been introduced to maintain data integrity and to replace the original provisions on the cyclic redundancy check (CRC).

7. The subjects are given in the amendment to the Foreword of Annex 14, Volume I, 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 14 concerning which your Government wishes to register disapproval, using the form in Attachment B for this purpose. Please note that only statements of disapproval need be registered and if you do not reply it will be assumed that you do not disapprove of the amendment;
- b) that before 8 October 2018 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 14, Volume I, as amended by all amendments up to and including Amendment 14, 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 14, Volume I, as amended by all amendments up to and including Amendment 14.

9. With reference to the request in paragraph 8 a) above, it should be noted that a registration of disapproval of Amendment 14 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.

10. With reference to the request in paragraph 8 b) above, it also should be 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.

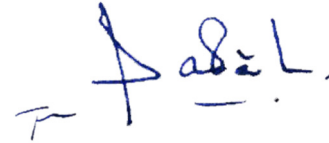
13. At the fifth meeting of its 204th Session, the Council requested that States, when being advised of the adoption of an Annex amendment, be provided with information on implementation and available guidance material, as well as an impact assessment. This is presented for your information in Attachments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

Editorial adjustment and a comprehensive new edition of Annex 14, Volume I

14. In order to maintain a comprehensive edition of Annex 14, Volume I, Amendment 13-B (adopted by Council on 22 February 2016 and applicable on 5 November 2020) will be consolidated with Amendment 14 in a new edition of the Annex. In so doing, the provisions of Amendment 13-B will be adjusted editorially to 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>.

15. As soon as practicable after the amendment becomes effective, on 16 July 2018, replacement pages incorporating Amendment 14 will be forwarded to you.

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

A handwritten signature in blue ink, appearing to read 'Fang Liu', with a horizontal line underneath the name.

Fang Liu
Secretary General

Enclosures:

- A — Amendment to the Foreword of Annex 14, Volume I
- B — Form on notification of disapproval of all or part of Amendment 14 to Annex 14, Volume I
- C — Form on notification of compliance with or differences from Annex 14, Volume I
- D — Note on the Notification of Differences
- E — Implementation task list and outline of guidance material in relation to Amendment 14 to Annex 14, Volume I
- F — Impact assessment in relation to Amendment 14 to Annex 14, Volume I

ATTACHMENT A to State letter AN 4/1.2.27-18/23

AMENDMENT TO THE FOREWORD OF ANNEX 14, VOLUME I

Add the following at the end of Table A:

<i>Amendment</i>	<i>Source(s)</i>	<i>Subject</i>	<i>Adopted/Approved Effective Applicable</i>
14	<p>Second meeting of the Aerodrome Design and Operations Panel (ADOP/2);</p> <p>Thirteenth meeting of the Instrument Flight Procedures Panel (IFPP/13); and</p> <p>Twelfth meeting of the Aeronautical Information Service (AIS) Aeronautical Information Management (AIM) Study Group (AIS-AIMSG/12).</p>	<p>a) Revised aerodrome reference code in Table 1-1; runway widths, shoulders, turn pads and strips; taxiway widths, shoulders and strips; reduced taxiway minimum separation distances;</p> <p>b) an amendment to update footnote e. in Table 4-1; and</p> <p>c) a consequential amendment, as a result of the restructuring of Annex 15 and the introduction of PANS-AIM (Doc 10066), relating to change of references, data quality requirements and performance-based data error detection requirements.</p>	<p>9 March 2018 16 July 2018 8 November 2018</p>

ATTACHMENT B to State letter AN 4/1.2.27-18/23

NOTIFICATION OF DISAPPROVAL OF ALL OR PART OF
AMENDMENT 14 TO ANNEX 14, VOLUME I

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

(State) _____ hereby wishes to disapprove the following parts of
Amendment 14 to Annex 14, Volume I:

Signature _____

Date _____

NOTES

- 1) If you wish to disapprove all or part of Amendment 14 to Annex 14, Volume I, 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 14, 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 14, Volume I. Separate notifications on this are necessary. (See Attachment C.)
- 3) Please use extra sheets as required.

**NOTIFICATION OF COMPLIANCE WITH OR DIFFERENCES FROM
ANNEX 14, VOLUME I
(Including all amendments up to and including Amendment 14)**

To: The Secretary General
International Civil Aviation Organization
999 Boulevard Robert-Bourassa
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 14, Volume I, including all amendments up to and including Amendment 14.

2. The following differences will exist on _____ between the regulations and/or practices of **(State)** _____ and the provisions of Annex 14, Volume I, including Amendment 14 (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)
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(Please use extra sheets as required)

3. By the dates indicated below, **(State)** _____ will have complied with the provisions of Annex 14, Volume I, including all amendments up to and including Amendment 14 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 14 TO ANNEX 14, VOLUME I**

1. IMPLEMENTATION TASK LIST

1.1 Essential steps to be followed by a State in order to implement the amendment to Annex 14, Volume I:

- a) identification of the rule-making process necessary to transpose the new ICAO provisions into national regulations;
- b) establishment of a national implementation plan that takes into account the new ICAO provisions;
- c) conducting of a gap analysis between the new ICAO provisions and national framework;
- d) drafting of the necessary modification(s) to the national regulations;
- e) official adoption of the national regulations and means of compliance;
- f) modification of the oversight framework according to the new national regulations;
- g) filing of State differences with ICAO, if necessary;
- h) publication of significant differences in the AIP;
- i) implementation of the new national regulations by aerodrome operators; and
- j) oversight by the State on the implementation of regulations.

2. STANDARDIZATION PROCESS

2.1 Effective date: 16 July 2018

2.2 Applicability date: 8 November 2018

2.3 Embedded applicability date(s): N/A

3. SUPPORTING DOCUMENTATION

3.1 ICAO documentation

Title	Type (PANS/TI/Manual/Circ)	Planned publication date
<i>Aerodrome Design Manual, Part 1 — Runways (Doc 9157)</i>	Updated guidance	November 2018
<i>Aerodrome Design Manual, Part 2 — Taxiways, Aprons and Holding Bays (Doc 9157)</i>	Updated guidance	November 2018
<i>Aeronautical Information Services Manual (Doc 8126)</i>	Updated guidance	November 2018
<i>Procedures for Air Navigation Services — Aeronautical Information Management (PANS-AIM) (Doc 10066)</i>	PANS	November 2018
<i>New Larger Aeroplanes – Infringement of the Obstacle Free Zone: Collision Risk Model and Aeronautical Study (Circ 345)</i>	Circular	November 2018

3.2 External documentation

Title	External Organization	Publication date
N/A		

4. IMPLEMENTATION ASSISTANCE TASKS

Type	Global	Regional
Workshops		PIRGs, AOP working groups
		AIM Conferences/workshops

5. UNIVERSAL SAFETY OVERSIGHT AUDIT PROGRAMME (USOAP)

5.1 Changes are envisaged in the protocol questions due to the modification of references to Annex 15 and the proposed new PANS-AIM.

**IMPACT ASSESSMENT IN RELATION TO AMENDMENT 14 TO
ANNEX 14, VOLUME I**

1. INTRODUCTION

1.1 Amendment 14 to Annex 14, Volume I addresses a) modifications of aerodrome design specifications in Chapters 3 and 4; b) an amendment to update footnote e. in Table 4-1; and c) a consequential amendment, resulting from the restructuring of Annex 15 and the proposed new PANS-AIM, relating to change of references, data quality requirements and performance-based data error detection requirements.

2. IMPACT ASSESSMENT

2.1 Modification of aerodrome design specifications in Chapters 3 and 4

2.1.1 *Safety impact:* Neutral. The de-linking of the outer main gear wheel span (OMGWS) from current aerodrome reference code methodology and the application of this parameter in the relevant design provisions will not affect safety. Industry research provided convincing evidence that current separation distances can be reduced without any reduction in the level of safety. The reduction in runway width is based on actual landing deviation studies of code F aeroplanes which have demonstrated that the standard deviation from the centreline of a 45 m wide runway is less than what was assumed previously. On taxiways, the risk level for veer-off is much less than on runways due to the lower speed involved. Harmonized taxiway values improve the accuracy of aeroplane trajectory while maintaining the overall area coverage to sustain occasional excursions which are supported by shoulders and graded strip.

2.1.2 *Financial impact:* Positive. For States, the certification of existing aerodromes from code E to code F will be easier due to reduction in costs and fewer studies required. For aerodrome operators, acceptance of the proposed changes will significantly improve efficiency and reduce construction and maintenance costs for many aerodromes in different parts of the world. Aerodromes can also accept code F operations within existing infrastructure, thus increasing capacity, particularly at congested aerodromes where slots are at a premium. In terms of the costs, a 60 m wide runway costs approximately 20 per cent more to build than one measuring 45 m wide including 15 m wide paved shoulders. For taxiways, a 2 m reduction in taxiway width for large aerodromes, some of which having as much as 50 km or more of taxiways, results in enormous savings. Furthermore, annual maintenance costs, incurring – as a rule of thumb – one per cent of the construction costs, are also expected to be reduced with these improved specifications.

2.1.3 *Security impact:* Nil

2.1.4 *Environmental impact:* Positive. Updated and improved specifications will preclude overdesign/overprovisions; avoid unnecessary expansion/relocation; constitute a more environmentally-efficient use of land surface; be less dependent on natural resources and result in less use of toxic materials for operations and maintenance.

2.1.5 *Efficiency impact:* Positive. More efficient use of land surface, particularly at aerodromes where real estate is at a premium. Aerodromes will be able to accept code F operations within existing infrastructure, thus increasing capacity and efficiency, particularly at congested aerodromes where slots are at a premium. Airlines unable to operate code F aeroplanes on routes currently unavailable due to States' restrictions will have greater opportunities to deploy their fleet without any complicated network planning.

2.1.6 *Expected implementation time:* Between two to five years from the applicability date.

2.2 **Amendment concerning update to footnote e. in Table 4-1**

2.2.1 *Safety impact:* Positive. The amendment ensures alignment among requirements, as contained in Annex 14, Volume I, PANS-Aerodromes (Doc 9981) and Circulars 301 and 345 and avoids their misinterpretation. Therefore, there is an indirect benefit in terms of safety.

2.2.2 *Financial impact:* Negligible.

2.2.3 *Security impact:* Nil.

2.2.4 *Environmental impact:* Negligible.

2.2.5 *Efficiency impact:* Positive. The amendment ensures alignment among requirements, as contained in Annex 14, Volume I, Circulars 301, 345 and the PANS-Aerodromes (Doc 9981). Requirements are retrieved in a more efficient way as they are cross-referenced. Therefore, the change is considered beneficial.

2.2.6 *Expected implementation time:* Up to one year from the applicability date.

2.3 **Consequential amendment resulting from the review and proposed restructuring of Annex 15 and the proposed new PANS-AIM, concerning change of references, data quality requirement and performance-based data error detection requirements**

2.3.1 *Safety impact:* Positive. The amendment ensures alignment among requirements, as contained in Annex 14, Volume I, Annex 15 and the PANS-AIM (Doc 10066) and avoids misinterpretation. Additionally, the introduction of performance-based requirements for data error detection allows for greater flexibility in terms of implementation techniques, leading to more efficient processes and allowing an enhanced output in terms of quality. This results in a reduced risk of providing erroneous data and increases safety.

2.3.2 *Financial impact:* Minimal financial impact to both States and Industry.

2.3.3 *Security impact:* Nil.

2.3.4 *Environmental impact:* Negligible.

2.3.5 *Efficiency impact:* Positive. The amendment to Annex 14, Volume I relocates the quality requirements for aeronautical data into a single reference (the Aeronautical Data Catalogue), which will facilitate compliance by Contracting States, and allow future changes in aeronautical data specificity to be updated with greater ease. Requirements are cross-referenced and therefore retrieved in a more efficient way.

2.3.6 *Expected implementation time:* States will require no more than one year to modify their regulatory framework to take into account the new references to Annex 15 and the PANS-AIM.

— END —

AMENDMENT No. 14

TO THE

**INTERNATIONAL STANDARDS
AND RECOMMENDED PRACTICES**

AERODROMES

ANNEX 14

TO THE CONVENTION ON INTERNATIONAL CIVIL AVIATION

**VOLUME I
AERODROME DESIGN AND OPERATIONS**

The amendment to Annex 14, Volume I 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 4/1.2.27-18/23 refers.)

MARCH 2018

INTERNATIONAL CIVIL AVIATION ORGANIZATION

**AMENDMENT 14 TO THE INTERNATIONAL STANDARDS AND
RECOMMENDED PRACTICES**

**ANNEX 14 — AERODROMES
VOLUME I — AERODROME DESIGN AND OPERATIONS**

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 14 to the International Standards and Recommended Practices contained in the document entitled *International Standards and Recommended Practices, Aerodromes — Aerodrome Design and Operations* which for convenience is designated Annex 14, Volume I 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 2018, 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; and
 - c) to invite each Contracting State to notify additionally any differences between its own practices and those established by the Recommended Practices, following the procedure specified in subparagraph b) above with respect to differences from Standards.

**NOTES ON THE PRESENTATION OF THE
AMENDMENT TO ANNEX 14, VOLUME I**

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

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

text to be deleted

New text to be inserted is highlighted with grey shading.

new text to be inserted

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

new text to replace existing text

**TEXT OF AMENDMENT 14
TO THE
INTERNATIONAL STANDARDS
AND RECOMMENDED PRACTICES**

AERODROMES

**ANNEX 14
TO THE CONVENTION ON INTERNATIONAL CIVIL AVIATION**

**VOLUME I
AERODROME DESIGN AND OPERATIONS**

TABLE OF CONTENTS

...

1.6 Aerodrome Reference code.....1-12

...

~~APPENDIX 5.— Aeronautical data quality requirementsAPP 5-1~~

Editorial Note.— *Renumber* subsequent appendix accordingly.

...

ABBREVIATIONS AND SYMBOLS

Abbreviations

ACN Aircraft classification number

...

OLS Obstacle limitation surface

OMGWS Outer main gear wheel span

PAPI Precision approach path indicator

...

PUBLICATIONS

(related to the specifications of this Annex)

...

Procedures for Air Navigation Services — Aerodromes (PANS-Aerodromes) (Doc 9981)

Procedures for Air Navigation Services — Aircraft Operations (PANS-OPS) (Doc 8168)

Volume I — *Flight Procedures*

Volume II — *Construction of Visual and Instrument Flight Procedures*

Procedures for Air Navigation Services — Air Traffic Management (PANS-ATM) (Doc 4444)

Procedures for Air Navigation Services — Aeronautical Information Management (PANS-AIM)
(Doc 10066)

...

CHAPTER 1. GENERAL

...

1.1 Definitions

...

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

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

...

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

...

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

...

Obstacle free zone (OFZ). The airspace above the inner approach surface, inner transitional surfaces, and balked landing surface and that portion of the strip bounded by these surfaces, which is not penetrated by any fixed obstacle other than a low-mass and frangibly mounted one required for air navigation purposes.

Outer main gear wheel span (OMGWS). The distance between the outside edges of the main gear wheels.

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

...

1.3 Common reference systems

...

1.3.3 Temporal reference system

...

1.3.3.2 When a different temporal reference system is used, this shall be indicated in GEN 2.1.2 of the Aeronautical Information Publication (AIP); ~~see Annex 15, Appendix 1.~~

Note.— See PANS-AIM (Doc 10066), Appendix 2.

1.4 Certification of aerodromes

Note.— The intent of these specifications is to ensure the establishment of a regulatory regime so that compliance with the specifications in this Annex can be effectively enforced. It is recognized that the methods of ownership, operation and surveillance of aerodromes differ among States. The most effective and transparent means of ensuring compliance with applicable specifications is the availability of a separate safety oversight entity and a well-defined safety oversight mechanism with support of appropriate legislation to be able to carry out the function of safety regulation of aerodromes. When an aerodrome is granted a certificate, it signifies to aircraft operators and other organizations operating on the aerodrome that, at the time of certification, the aerodrome meets the specifications regarding the facility and its operation, and that it has, according to the certifying authority, the capability to maintain these specifications for the period of validity of the certificate. The certification process also establishes the baseline for continued monitoring of compliance with the specifications. Information on the status of certification of aerodromes would need to be provided to the appropriate aeronautical information services for promulgation in the Aeronautical Information Publication (AIP). See 2.13.1 and ~~Annex 15~~ PANS-AIM (Doc 10066), Appendix 12, AD 1.5.

...

1.6 Aerodrome Reference code

Introductory Note.— The intent of the reference code is to provide a simple method for interrelating the numerous specifications concerning the characteristics of aerodromes so as to provide a series of aerodrome facilities that are suitable for the aeroplanes that are intended to operate at the aerodrome. The code is not intended to be used for determining runway length or pavement strength requirements. The code is composed of two elements which are related to the aeroplane performance characteristics and dimensions. Element 1 is a number based on the aeroplane reference field length and element 2 is a letter based on the aeroplane wingspan ~~and outer main gear wheel span. A particular specification is related to the more appropriate of the two elements of the code or to an appropriate combination of the two code elements.~~ The code letter or number within an element selected for design purposes is related to the critical aeroplane characteristics for which the facility is provided. When applying Annex 14, Volume I, first identify the aeroplanes which the aerodrome is intended to serve ~~and first identified~~ and then determine the two elements of the code.

1.6.1 An aerodrome reference code — code number and letter — which is selected for aerodrome planning purposes shall be determined in accordance with the characteristics of the aeroplane for which an aerodrome facility is intended.

1.6.2 The aerodrome reference code numbers and letters shall have the meanings assigned to them in Table 1-1.

1.6.3 The code number for element 1 shall be determined from Table 1-1, column 1, selecting the code number corresponding to the highest value of the aeroplane reference field lengths of the aeroplanes for which the runway is intended.

Note 1.— The determination of the aeroplane reference field length is solely for the selection of a code number and is not intended to influence the actual runway length provided.

Note 2.— Guidance on determining the runway length is given in the Aerodrome Design Manual, (Doc 9157), Part 1 — Runways.

1.6.4 The code letter for element 2 shall be determined from Table 1-1, column 3, by selecting the code letter which corresponds to the greatest wingspan, ~~or the greatest outer main gear wheel span, whichever gives the more demanding code letter~~ of the aeroplanes for which the facility is intended.

*Note.— Guidance to assist the appropriate authority in **on** determining the aerodrome reference code is given in the Aerodrome Design Manual (Doc 9157), Parts 1 and 2.*

Table 1-1. Aerodrome reference code
(see 1.6.2 to 1.6.4)

Code number (1)	Code element 1		Code element 2		
	Aeroplane reference field length (2)	Code letter (3)	Wingspan (4)	Outer main gear wheel span ^a (5)	
1	Less than 800 m	A	Up to but not including 15 m	Up to but not including 4.5 m	
2	800 m up to but not including 1 200 m	B	15 m up to but not including 24 m	4.5 m up to but not including 6 m	
3	1 200 m up to but not including 1 800 m	C	24 m up to but not including 36 m	6 m up to but not including 9 m	
4	1 800 m and over	D	36 m up to but not including 52 m	9 m up to but not including 14 m	
		E	52 m up to but not including 65 m	9 m up to but not including 14 m	
		F	65 m up to but not including 80 m	14 m up to but not including 16 m	

a. Distance between the outside edges of the main gear wheels.

Editorial Note.—*Replace existing Table 1-1 with text below.*

Code element 1	
Code number	Aeroplane reference field length
1	less than 800 m
2	800 m up to but not including 1 200 m
3	1 200 m up to but not including 1 800 m
4	1 800 m and over

Code element 2	
Code letter	Wingspan
A	Up to but not including 15 m
B	15 m up to but not including 24 m
C	24 m up to but not including 36 m
D	36 m up to but not including 52 m
E	52 m up to but not including 65 m
F	65 m up to but not including 80 m

Note.— Guidance on planning for aeroplanes with wingspans greater than 80 m is given in the Aerodrome Design Manual (Doc 9157), Parts 1 and 2.

1.7 Specific procedures for aerodrome operations

Introductory Note.— This section introduces PANS-Aerodromes (Doc 9981) for use by an aerodrome undertaking an assessment of its compatibility with the type of traffic or operation it is intending to accommodate. The material in the PANS-Aerodromes addresses operational issues faced by existing aerodromes and provides the necessary procedures to ensure the continued safety of operations. Where alternative measures, operational procedures and operating restrictions have been developed,

these are detailed in the aerodrome manual and reviewed periodically to assess their continued validity. The PANS-Aerodromes does not substitute nor circumvent the provisions contained in this Annex. It is expected that infrastructure on an existing aerodrome or a new aerodrome will fully comply with the requirements in this Annex. See Annex 15, ~~4.1.2~~ 5.2.2.2 (c) on a State's responsibilities for the listing of its differences to the related ICAO Procedures in its Aeronautical Information Publication.

...

1.7.2 Information concerning alternative measures, operational procedures and operating restrictions implemented at an aerodrome arising from 1.7.1 shall be promulgated.

Note 1.— See ~~Annex 15~~ PANS-AIM (Doc 10066), Appendix ~~12~~, AD 2.20 on the provision of a detailed description of local traffic regulations.

Note 2.— See PANS-Aerodromes (Doc 9981), Chapter 3, section 3.6 on promulgation of safety information.

...

CHAPTER 2. AERODROME DATA

2.1 Aeronautical data

2.1.1 Determination and reporting of aerodrome-related aeronautical data shall be in accordance with the accuracy and integrity classification required to meet the needs of the end-users of aeronautical data requirements set forth in Tables A5-1 to A5-5 contained in Appendix 5 while taking into account the established quality system procedures. Accuracy requirements for aeronautical data are based upon a 95 per cent confidence level and in that respect, three types of positional data shall be identified: surveyed points (e.g. runway threshold), calculated points (mathematical calculations from the known surveyed points of points in space, fixes) and declared points (e.g. flight information region boundary points).

Note.— ~~Specifications governing the quality system are given in Annex 15, Chapter 3~~ Specifications concerning the accuracy and integrity classification related to aerodrome-related aeronautical data are contained in PANS-AIM (Doc 10066), Appendix 1.

2.1.2 **Recommendation.**— Aerodrome mapping data should be made available to the aeronautical information services for aerodromes deemed relevant by States where safety and/or performance-based operations suggest possible benefits.

Note.— Aerodrome mapping databases related provisions are contained in Annex 15, Chapter ~~4~~5 and PANS-AIM (Doc 10066), Chapter 5.

2.1.3 Where made available in accordance with 2.1.2, the selection of the aerodrome mapping data features to be collected shall be made with consideration of the intended applications.

Note 1.— It is intended that the selection of the features to be collected match a defined operational need.

~~2.1.4 Where made available in accordance with 2.1.2, aerodrome mapping data shall comply with the accuracy and integrity requirements in Appendix 5.~~

Note 2.— Aerodrome mapping databases can be provided at one of two levels of quality — fine or medium. These levels and the corresponding numerical requirements are defined in RTCA Document DO-272B and European Organization for Civil Aviation Equipment (EUROCAE) Document ED-99C — User Requirements for Aerodrome Mapping Information.

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

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

~~2.1.5 Contracting States shall ensure that integrity of aeronautical data is maintained throughout the data process from survey/origin to the next intended user. Based on the applicable integrity classification, the validation and verification procedures shall:~~

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

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

~~2.1.6 Protection of electronic aeronautical data while stored or in transit shall be totally monitored by the cyclic redundancy check (CRC). To achieve protection of the integrity level of critical and essential aeronautical data as classified in 2.1.5, a 32 or 24 bit CRC algorithm shall apply respectively.~~

~~2.1.7 **Recommendation.**— To achieve protection of the integrity level of routine aeronautical data as classified in 2.1.5, a 16 bit CRC algorithm should apply.~~

Note.— Guidance material on the aeronautical data quality requirements (accuracy, resolution, integrity, protection and traceability) is contained in the World Geodetic System — 1984 (WGS 84) Manual (Doc 9674). Supporting material in respect of the provisions of Appendix 5 related to accuracy and integrity of aeronautical data is contained in RTCA Document DO-201A and European Organization for Civil Aviation Equipment (EUROCAE) Document ED-77, entitled Standards for Aeronautical Information.

~~2.1.8 Geographical coordinates indicating latitude and longitude shall be determined and reported to the aeronautical information services authority in terms of the World Geodetic System 1984 (WGS 84) geodetic reference datum, identifying those geographical coordinates which have been transformed into WGS 84 coordinates by mathematical means and whose accuracy of original field work does not meet the requirements in Appendix 5, Table A5-1.~~

~~2.1.9 The order of accuracy of the field work shall be such that the resulting operational navigation data for the phases of flight will be within the maximum deviations, with respect to an appropriate reference frame, as indicated in the tables contained in Appendix 5.~~

~~2.1.10 In addition to the elevation (referenced to mean sea level) of the specific surveyed ground positions at aerodromes, geoid undulation (referenced to the WGS 84 ellipsoid) for those positions as indicated in Appendix 5 shall be determined and reported to the aeronautical information services authority.~~

~~Note 1.— An appropriate reference frame is that which enables WGS 84 to be realized on a given aerodrome and with respect to which all coordinate data are related.~~

~~Note 2.— Specifications governing the publication of WGS 84 coordinates are given in Annex 4—Aeronautical Charts, Chapter 2 and Annex 15, Chapter 1.~~

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2.5 Aerodrome dimensions and related information

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2.5.5 The geographical coordinates of obstacles in Area 2 (the part within the aerodrome boundary) and in Area 3 shall be measured and reported to the aeronautical information services authority in degrees, minutes, seconds and tenths of seconds. In addition, the top elevation, type, marking and lighting (if any) of obstacles shall be reported to the aeronautical information services authority.

Note 1.— See Annex 15, Appendix 8I, for graphical illustrations of obstacle data collection surfaces and criteria used to identify obstacles in Areas 2 and 3.

Note 2.— Appendix 5 PANS-AIM (Doc 10066), Appendix 1 and Appendix 8 provides requirements for obstacle data determination in Areas 2 and 3.

Note 3.— Implementation of Annex 15, provisions 10.1.4 and 10.1.6, concerning the availability, as of 12 November 2015, of obstacle data according to Area 2 and Area 3 specifications would be facilitated by appropriate advance planning for the collection and processing of such data.

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2.9 Condition of the movement area and related facilities

2.9.1 Information on the condition of the movement area and the operational status of related facilities shall be provided to the appropriate aeronautical information services units, and similar information of operational significance to the air traffic services units, to enable those units to provide the necessary information to arriving and departing aircraft. The information shall be kept up to date and changes in conditions reported without delay.

Note.— The Nature, format and conditions of the information to be provided are specified in Annex 15 the PANS-AIM (Doc 10066) and the PANS-ATM (Doc 4444).

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Water on a runway

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2.9.7 Notification shall be given to aerodrome users when the friction level of a paved runway or portion thereof is less than that specified by the State in accordance with 10.2.3.

Note.— Guidance on conducting a runway surface friction characteristics evaluation programme that includes determining and expressing the minimum friction level is provided in Attachment A, Section 7.

Snow, slush, ice or frost on a runway

Note 1.— The intent of these specifications is to satisfy the SNOWTAM and NOTAM promulgation requirements contained in Annex 15 and the PANS-AIM (Doc 10066).

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2.13 Coordination between aeronautical information services and aerodrome authorities

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2.13.3 Of a particular importance are changes to aeronautical information that affect charts and/or computer-based navigation systems which qualify to be notified by the aeronautical information regulation and control (AIRAC) system, as specified in Annex 15, Chapter 6, and Appendix 4. The predetermined, internationally agreed AIRAC effective dates in addition to 14 days postage time shall be observed by the responsible aerodrome services when submitting the raw information/data to aeronautical information services.

Note.— Detailed specifications concerning the AIRAC system are contained in PANS-AIM (Doc 10066), Chapter 6.

2.13.4 The aerodrome services responsible for the provision of raw aeronautical information/data to the aeronautical information services shall do that while taking into account accuracy and integrity requirements required to meet the needs of the end-user of aeronautical data for aeronautical data as specified in Appendix 5 to this Annex.

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

Note 2.— Specifications for the issue of NOTAM and SNOWTAM are contained in Annex 15, Chapter 56 and PANS-AIM (Doc 10066), Appendices 63 and 24, respectively.

Note 3.— AIRAC information is distributed by the AIS at least 42 days in advance of the AIRAC effective dates with the objective of reaching recipients at least 28 days in advance of the effective date.

Note 4.— The schedule of the predetermined internationally agreed AIRAC common effective dates at intervals of 28 days and guidance for the AIRAC use are contained in the Aeronautical Information Services Manual (Doc 8126, Chapter 2).

CHAPTER 3. PHYSICAL CHARACTERISTICS

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3.1.9 Runways with stopways or clearways

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Width of runways

3.1.10 **Recommendation.**— *The width of a runway should be not less than the appropriate dimension specified in the following tabulation:*

Code number	Code letter					
	A	B	C	D	E	F
1 ^a	18 m	18 m	23 m	—	—	—
2 ^a	23 m	23 m	30 m	—	—	—
3	30 m	30 m	30 m	45 m	—	—
4	—	—	45 m	45 m	45 m	60 m

— a. *The width of a precision approach runway should be not less than 30 m where the code number is 1 or 2.*

Outer Main Gear Wheel Span (OMGWS)

Code number	Up to but not including 4.5 m	4.5 m up to but not including 6 m	6 m up to but not including 9 m	9 m up to but not including 15 m
1 ^a	18 m	18 m	23 m	—
2 ^a	23 m	23 m	30 m	—
3	30 m	30 m	30 m	45 m
4	—	—	45 m	45 m

a. *The width of a precision approach runway should be not less than 30 m where the code number is 1 or 2.*

Note 1.— *The combinations of code numbers and letters **OMGWS** for which widths are specified have been developed for typical aeroplane characteristics.*

Note 2.— *Factors affecting runway width are given in the Aerodrome Design Manual, (Doc 9157), Part 1.*

Note 3.— *See 3.2 concerning the provision of runway shoulders, in particular for Code F aeroplanes with four (or more) engines.*

...

3.2 Runway shoulders

General

Note.— Guidance on characteristics and treatment of runway shoulders is given in Attachment A, Section 9, and in the Aerodrome Design Manual (Doc 9157), Part 1.

3.2.1 **Recommendation.**— Runway shoulders should be provided for a runway where the code letter is D or E and the runway width is less than 60 m or F.

3.2.2 **Recommendation.**— Runway shoulders should be provided for a runway where the code letter is F.

Width of runway shoulders

3.2.32 **Recommendation.**— For aeroplanes with OMGWS from 9 m up to but not including 15 m, the runway shoulders should extend symmetrically on each side of the runway so that the overall width of the runway and its shoulders is not less than:

- 60 m where the code letter is D or E; and
- 60 m where the code letter is F with two- or three-engined aeroplanes; and
- 75 m where the code letter is F with four (or more)-engined aeroplanes.

Slopes on runway shoulders

3.2.43 **Recommendation.**— The surface of the shoulder that abuts the runway should be flush with the surface of the runway and its transverse slope should not exceed 2.5 per cent.

Strength of runway shoulders

3.2.54 **Recommendation.**— The portion of a runway shoulder between the runway edge and a distance of 30 m from the runway centreline should be prepared or constructed so as to be capable, in the event of an aeroplane running off the runway, of supporting the aeroplane without inducing structural damage to the aeroplane and of supporting ground vehicles which may operate on the shoulder.

Note.— Guidance on strength of runway shoulders is given in the Aerodrome Design Manual (Doc 9157), Part 1.

Surface of runway shoulders

3.2.5 **Recommendation.**— A runway shoulder should be prepared or constructed so as to resist erosion and the ingestion of the surface material by aeroplane engines.

3.2.6 **Recommendation.**— Runway shoulders for code letter F aeroplanes should be paved to a minimum overall width of runway and shoulder of not less than 60 m.

Note.— Guidance on surface of runway shoulders is given in the Aerodrome Design Manual, (Doc 9157), Part 1.

3.3 Runway turn pads

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3.3.5 **Recommendation.**— *The nose wheel steering angle to be used in the design of the runway turn pad should not exceed 45 degrees.*

3.3.6 The design of a runway turn pad shall be such that, when the cockpit of the aeroplane for which the turn pad is intended remains over the turn pad marking, the clearance distance between any wheel of the aeroplane landing gear and the edge of the turn pad shall be not less than that given by the following tabulation:

<i>Code letter</i>	<i>Clearance</i>
A	1.5 m
B	2.25 m
C	3 m if the turn pad is intended to be used by aeroplanes with a wheel base less than 18 m; 4.5 m if the turn pad is intended to be used by aeroplanes with a wheel base equal to or greater than 18 m.
D	4.5 m
E	4.5 m
F	4.5 m

	OMGWS			
	Up to but not including 4.5 m	4.5 m up to but not including 6 m	6 m up to but not including 9 m	9 m up to but not including 15 m
Clearance	1.50 m	2.25 m	3 m ^a or 4 m ^b	4 m

^a *If the turn pad is intended to be used by aeroplanes with a wheel base less than 18 m.*

^b *If the turn pad is intended to be used by aeroplanes with a wheel base equal to or greater than 18 m.*

Note.— Wheel base means the distance from the nose gear to the geometric centre of the main gear.

~~3.3.7 **Recommendation.**— *Where severe weather conditions and resultant lowering of surface friction characteristics prevail, a larger wheel-to-edge clearance of 6 m should be provided where the code letter is E or F.*~~

Editorial Note.— *Renumber subsequent paragraphs accordingly.*

...

3.4 Runway strips

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Width of runway strips

3.4.3 A strip including a precision approach runway shall, wherever practicable, extend laterally to a distance of at least:

- ~~150 m~~ 140 m where the code number is 3 or 4; and
- ~~75 m~~ 70 m where the code number is 1 or 2;

on each side of the centre line of the runway and its extended centre line throughout the length of the strip.

3.4.4 **Recommendation.**— *A strip including a non-precision approach runway should extend laterally to a distance of at least:*

- ~~150 m~~ 140 m where the code number is 3 or 4; and
- ~~75 m~~ 70 m where the code number is 1 or 2;

on each side of the centre line of the runway and its extended centre line throughout the length of the strip.

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3.9 Taxiways

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3.9.3 The design of a taxiway shall be such that, when the cockpit of the aeroplane for which the taxiway is intended remains over the taxiway centre line markings, the clearance distance between the outer main wheel of the aeroplane and the edge of the taxiway shall be not less than that given by the following tabulation:

<i>Code letter</i>	<i>Clearance</i>
A	1.5 m
B	2.25 m
C	3 m on straight portions; 3 m on curved portions if the taxiway is intended to be used by aeroplanes with a wheel base less than 18 m; 4.5 m on curved portions if the taxiway is intended to be used by aeroplanes with a wheel base equal to or greater than 18 m.
D	4.5 m
E	4.5 m
F	4.5 m

	OMGWS			
	Up to but not including 4.5 m	4.5 m up to but not including 6 m	6 m up to but not including 9 m	9 m up to but not including 15 m
Clearance	1.50 m	2.25 m	3 m ^{a, b} or 4 m ^c	4 m

^a On straight portions.

^b On curved portions if the taxiway is intended to be used by aeroplanes with a wheel base of less than 18 m.

^c On curved portions if the taxiway is intended to be used by aeroplanes with a wheel base equal to or greater than 18 m.

Note 1.— Wheel base means the distance from the nose gear to the geometric centre of the main gear.

Note 2.— ~~Where the code letter is F and the traffic density is high, a wheel-to-edge clearance greater than 4.5 m may be provided to permit higher taxiing speeds.~~

Note 3.— ~~This provision applies to taxiways first put into service on or after 20 November 2008.~~

Width of taxiways

3.9.4 **Recommendation.**— A straight portion of a taxiway should have a width of not less than that given by the following tabulation:

Code letter	Taxiway width
A	7.5 m
B	10.5 m
C	15 m
D	18 m if the taxiway is intended to be used by aeroplanes with an outer main gear wheel span of less than 9 m; 23 m if the taxiway is intended to be used by aeroplanes with an outer main gear wheel span equal to or greater than 9 m.
E	23 m
F	25 m

	OMGWS			
	Up to but not including 4.5 m	4.5 m up to but not including 6 m	6 m up to but not including 9 m	9 m up to but not including 15 m
Taxiway width	7.5 m	10.5 m	15 m	23 m

Note.— Guidance on width of taxiways is given in the Aerodrome Design Manual (Doc 9157), Part 2.

...

Table 3-1. Taxiway minimum separation distances

Code letter	Distance between taxiway centre line and runway centre line (metres)								Taxiway centre line to taxiway centre line (metres)	Taxiway, other than aircraft stand taxilane, centre line to object (metres)	Aircraft stand centre line to aircraft stand taxilane centre line (metres)	Aircraft stand taxilane centre line to object (metres)
	Instrument runways				Non-instrument runways							
	Code number				Code number							
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
A	82.5 77.5	82.5 77.5	—	—	37.5	47.5	—	—	23	15.5	19.5	12
B	87 82	87 82	152	—	42	52	87	—	32	20	28.5	16.5
C	88	88	468 158	158	48	58	93	93	44	26	40.5	22.5
D	—	—	476 166	476 166	—	—	101	101	63	37	59.5	33.5
E	—	—	172.5	182.5 172.5	—	—	107.5	107.5	76	43.5	72.5	40
F	—	—	180	190 180	—	—	115	115	91	51	87.5	47.5

Note 1.— The separation distances shown in columns (2) to (9) represent ordinary combinations of runways and taxiways. The basis for development of these distances is given in the Aerodrome Design Manual (Doc 9157), Part 2.

Note 2.— The distances in columns (2) to (9) do not guarantee sufficient clearance behind a holding aeroplane to permit the passing of another aeroplane on a parallel taxiway. See the Aerodrome Design Manual (Doc 9157), Part 2.

...

3.10 Taxiway shoulders

Note.— Guidance on characteristics of taxiway shoulders and on shoulder treatment is given in the Aerodrome Design Manual (Doc 9157), Part 2.

3.10.1 **Recommendation.**— Straight portions of a taxiway where the code letter is C, D, E or F should be provided with shoulders which extend symmetrically on each side of the taxiway so that the overall width of the taxiway and its shoulders on straight portions is not less than:

- 60 m 44 m where the code letter is F; and
- 44 m 38 m where the code letter is E; and
- 38 m 34 m where the code letter is D; and
- 25 m where the code letter is C.

On taxiway curves and on junctions or intersections where increased pavement is provided, the shoulder width should be not less than that on the adjacent straight portions of the taxiway.

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3.11 Taxiway strips

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Grading of taxiway strips

3.11.4 **Recommendation.**— *The centre portion of a taxiway strip should provide a graded area to a distance from the centre line of the taxiway of ~~at least~~ not less than that given by the following tabulation:*

- *11 m where the code letter is A;*
 - *12.5 m where the code letter is B or C;*
 - *19 m where the code letter is D;*
 - *22 m where the code letter is E; and*
 - *30 m where the code letter is F.*
- *10.25 m where the OMGWS is up to but not including 4.5 m*
 - *11 m where the OMGWS is 4.5 m up to but not including 6 m*
 - *12.50 m where the OMGWS is 6 m up to but not including 9 m*
 - *18.50 m where the OMGWS is 9 m up to but not including 15 m, where the code letter is D*
 - *19 m where the OMGWS is 9 m up to but not including 15 m, where the code letter is E*
 - *22 m where the OMGWS is 9 m up to but not including 15 m, where the code letter is F*

Note.— *Guidance on width of the graded portion of a taxiway is given in the Aerodrome Design Manual (Doc 9157), Part 2.*

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CHAPTER 4. OBSTACLE RESTRICTION AND REMOVAL

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Table 4-1. Dimensions and slopes of obstacle limitation surfaces — Approach runways

Surface and dimensions ^a (1)	APPROACH RUNWAYS									
	RUNWAY CLASSIFICATION								Precision approach category	
	Non-instrument Code number				Non-precision approach Code number				I Code number	II or III Code number
	1 (2)	2 (3)	3 (4)	4 (5)	1,2 (6)	3 (7)	4 (8)	1,2 (9)	3,4 (10)	3,4 (11)
CONICAL										
Slope	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Height	35 m	55 m	75 m	100 m	60 m	75 m	100 m	60 m	100 m	100 m
INNER HORIZONTAL										
Height	45 m	45 m	45 m	45 m	45 m	45 m	45 m	45 m	45 m	45 m
Radius	2 000 m	2 500 m	4 000 m	4 000 m	3 500 m	4 000 m	4 000 m	3 500 m	4 000 m	4 000 m
INNER APPROACH										
Width	—	—	—	—	—	—	—	90 m	120 m ^c	120 m ^c
Distance from threshold	—	—	—	—	—	—	—	60 m	60 m	60 m
Length	—	—	—	—	—	—	—	900 m	900 m	900 m
Slope	—	—	—	—	—	—	—	2.5%	2%	2%
APPROACH										
Length of inner edge	60 m	80 m	150 m	150 m	150 m 140 m	300 m 280 m	300 m 280 m	150 m 140 m	300 m 280 m	300 m 280 m
Distance from threshold	30 m	60 m	60 m	60 m	60 m	60 m	60 m	60 m	60 m	60 m
Divergence (each side)	10%	10%	10%	10%	15%	15%	15%	15%	15%	15%
First section										
Length	1 600 m	2 500 m	3 000 m	3 000 m	2 500 m	3 000 m	3 000 m	3 000 m	3 000 m	3 000 m
Slope	5%	4%	3.33%	2.5%	3.33%	2%	2%	2.5%	2%	2%
Second section										
Length	—	—	—	—	—	3 600 m ^b	3 600 m ^b	12 000 m	3 600 m ^b	3 600 m ^b
Slope	—	—	—	—	—	2.5%	2.5%	3%	2.5%	2.5%
Horizontal section										
Length	—	—	—	—	—	8 400 m ^b	8 400 m ^b	—	8 400 m ^b	8 400 m ^b
Total length	—	—	—	—	—	15 000 m	15 000 m	15 000 m	15 000 m	15 000 m
TRANSITIONAL										
Slope	20%	20%	14.3%	14.3%	20%	14.3%	14.3%	14.3%	14.3%	14.3%
INNER TRANSITIONAL										
Slope	—	—	—	—	—	—	—	40%	33.3%	33.3%
BALKED LANDING SURFACE										
Length of inner edge	—	—	—	—	—	—	—	90 m	120 m ^c	120 m ^c
Distance from threshold	—	—	—	—	—	—	—	c	1 800 m ^d	1 800 m ^d
Divergence (each side)	—	—	—	—	—	—	—	10%	10%	10%
Slope	—	—	—	—	—	—	—	4%	3.33%	3.33%

a. All dimensions are measured horizontally unless specified otherwise.

b. Variable length (see 4.2.9 or 4.2.17).

c. Distance to the end of strip

d. Or end of runway whichever is less.

e. Where the code letter is F (Table 1-1), the width is increased to 155-140 m. For information on except for those aerodromes that accommodate a code letter F aeroplanes equipped with digital avionics that provide steering commands to maintain an established track during the go-around manoeuvre.

Note. — See Circulars 301, — New Larger Aeroplanes — Infringement of the Obstacle Free Zone: Operational Measures and Aeronautical Study 345 and Chapter 4 of the PANS-Aerodromes, Part I (Doc 9981) for further information.

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CHAPTER 9. AERODROME OPERATIONAL SERVICES, EQUIPMENT AND INSTALLATIONS

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9.4 Wildlife strike hazard reduction

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9.4.1 The wildlife strike hazard on, or in the vicinity of, an aerodrome shall be assessed through:

- a) the establishment of a national procedure for recording and reporting wildlife strikes to aircraft;
- b) the collection of information from aircraft operators, aerodrome personnel and other sources on the presence of wildlife on or around the aerodrome constituting a potential hazard to aircraft operations; and
- c) an ongoing evaluation of the wildlife hazard by competent personnel.

Note.— See Annex 15, Chapter 85.

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9.12 Autonomous runway incursion warning system

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9.12.2 Where an ARIWS is installed at an aerodrome, information on its characteristics and status shall be provided to the appropriate aeronautical information services for promulgation in the AIP with the description of the aerodrome surface movement guidance and control system and markings as specified in Annex 15, ~~Appendix 1, AD 2.9.~~

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

CHAPTER 10. AERODROME MAINTENANCE

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10.3 Removal of contaminants

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10.3.4 **Recommendation.**— *Whenever the clearance of snow, slush, ice, etc., from the various parts of the movement area cannot be carried out simultaneously, the order of priority after the runway(s) in use should be set in consultation with the affected parties such as rescue and firefighting service and documented in a snow plan.*

Note 1.— See ~~Annex 15~~ PANS-AIM (Doc 10066), Appendix ~~12~~, Part 3, AD 1.2.2 for information to be promulgated in an AIP concerning a snow plan. The Aeronautical Information Services Manual (Doc 8126), ~~Chapter 5~~ contains guidance on the description of a snow plan including general policy concerning operational priorities established for the clearance of movement areas.

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~~APPENDIX 5. AERONAUTICAL DATA QUALITY REQUIREMENTS~~

Editorial Note.— *Delete* Appendix 5 in toto and *renumber* subsequent appendix and figures accordingly.

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ATTACHMENT A. GUIDANCE MATERIAL SUPPLEMENTARY TO ANNEX 14, VOLUME I

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6. Assessing the surface friction characteristics of snow-, slush-, ice- and frost-covered paved surfaces

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6.3 The friction conditions of a runway can be assessed in descriptive terms of “estimated surface friction”. The estimated surface friction is categorized as good, medium to good, medium, medium to poor, and poor, and promulgated in ~~Annex 15~~ PANS-AIM (Doc 10066), ~~Appendix 24~~, “SNOWTAM format” as well as in PANS-ATM, Chapter 12, 12.3, “ATC phraseologies”.

...

21. Autonomous runway incursion warning system (ARIWS)

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21.5 Promulgation of information

21.5.1 Information on the characteristics and status of an ARIWS at an aerodrome are promulgated in the AIP section AD 2.9, in PANS-AIM (Doc 10066) and its status updated as necessary through NOTAM or ATIS in compliance with 2.9.1 of this Annex.

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