ICAO Annex 14

to the Convention on
International Civil Aviation

Aerodromes

Volume 1
Aerodrome Design and Operations

WELCOME TO

ICAO Annex 14 Volume I 
Aerodrome Design and Operations Course
Introduction of Participants

Please introduce yourself:

The 5 W’s

Who are you?
Where do you work?
What is your job title?
What are your main responsibilities?
What do you hope to gain from this course?
ICAO

ICAO – International Civil Aviation Organization

ICAO Assembly
189 Member States

ICAO Council
36 Member States

ICAO Secretariat
Secretary General
ICAO – International Civil Aviation Organization

Convention on International Civil Aviation

Annexes to the Convention

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January 15

ICAO Annex 14 Training Course
The objectives of the ICAO Annex 14 Training/ workshop are:

- provide participants better understanding of Standards and Recommended Practices (SARPs) contained in ICAO Annex 14, Volume I,
- develop participants’ knowledge and skills for the implementation/use of the relevant ICAO Annex 14 Volume I SARPs for the design and operation of aerodromes [for aerodrome operator’s staff],
AMENDMENTS

The issue of amendments is announced regularly in the *ICAO Journal* and in the monthly *Supplement to the Catalogue of ICAO Publications and Audio-visual Training Aids*, which holders of this publication should consult. The space below is provided to keep a record of such amendments.

RECORD OF AMENDMENTS AND CORRIGENDA

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Aerodrome Design and Operations

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Chapter 2 – Aerodrome data
Chapter 3 – Physical characteristics
Chapter 4 – Obstacle restriction and removal
Chapter 5 – Visual Aids for navigation
Chapter 6 – Visual Aids for denoting obstacles
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  Part 2 - Land Use and Environmental Control
  Part 3 - Guidelines for Consultant/Construction Services

- **Manual on Certification of Aerodromes (Doc 9774)**

- **Safety Management Manual (SMM) (Doc 9859)**

- **Manual on the ICAO Bird Strike Information System (IBIS) (Doc 9332)**

- **Manual of Surface Movement Guidance and Control Systems (SMGCS) (Doc 9476)**

- **Heliport Manual (Doc 9261)**
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- Manual on Laser Emitters and Flight Safety (Doc 9815)
- 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)
## PUBLICATIONS

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Historical background

Standards and Recommended Practices (SARPs) for Aerodromes were first adopted by the Council on 29 May 1951 pursuant to the provisions of Article 37 of the Convention on International Civil Aviation (Chicago 1944) and designated as Annex 14 to the Convention.

The SARPs were based on recommendations of the Aerodromes, Air Routes and Ground Aids Division at its third session in September 1947 and at its fourth session in November 1949.
FOREWORD

Action by Contracting States

✓ **Notification of differences under Article 38**
   Article 38 places an obligation for States to notify ICAO when there is a difference between national regulations and practices and the international standards contained in an Annex.

✓ **Notification under Annex 15**
   Annex 15 requires the publication of differences between the national regulations and practices and the related ICAO Standards and Recommended Practices through the Aeronautical Information Service.
FOREWORD

Annex Components

1. Standards and Recommended Practices (SARPs)

**Standard**

“Any specification for physical characteristics, configuration, material, performance, personnel or procedure, the uniform application of which is recognised as necessary for the safety or regularity of international air navigation and to which Contracting States will conform in accordance with the Convention”.

[Standards have been printed in light face roman and the operative verb “shall” is used.]

**Example:**  5.3.5.10    The systems shall be suitable for both day and night operations.
FOREWORD

Annex Components

1. SARPs (continued)

**Recommended Practice**

“Any specification for physical characteristics, configuration, material, performance, personnel or procedure, the uniform application of which is **recognised as desirable** in the interest of safety, regularity or efficiency of international air navigation, and **to which Contracting States will endeavour to conform** in accordance with the Convention”.

**Recommended Practices** have been printed in light face italics and the operative verb “**should**” is used.

**Example:** 6.3.21 **Recommendation.**— The installation setting angles for high-intensity obstacle lights, Types A and B, should be in accordance with Table 6-2.
FOREWORD

Annex Components

2. Appendices

Comprise of materials grouped separately for convenience but forming part of the Standards and Recommended Practices adopted by the Council.

3. Definitions

Definitions of terms used in the Standards and Recommended Practices which are not self-explanatory in that they do not have accepted dictionary meanings. A definition does not have independent status but is an essential part of each Standard and Recommended Practice in which the term is used, since a change in the meaning of the term would affect the specification.
FOREWORD

Annex Components

4. Tables and Figures

Tables and Figures which add to or illustrate a Standard or Recommended Practice and which are referred to therein, form part of the associated Standard or Recommended Practice and have the same status.

Table

<table>
<thead>
<tr>
<th>Code letter</th>
<th>Instrument runways</th>
<th>Non-instrument runways</th>
<th>Taxiway centre line to taxiway centre line (metres)</th>
<th>Taxiway, other than aircraft stand taxiway, centre line to object (metres)</th>
<th>Aircraft stand taxiway centre line to object (metres)</th>
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<tr>
<td>A</td>
<td>82.5</td>
<td>-</td>
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<td>23.75</td>
<td>12</td>
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<tr>
<td>B</td>
<td>87</td>
<td>-</td>
<td>42</td>
<td>33.5</td>
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<td>C</td>
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<td>D</td>
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<td>190</td>
<td>-</td>
<td>115</td>
<td>97.5</td>
<td>-</td>
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</table>

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

Figure
FOREWORD

Annex Components

*Material approved by the Council for publication in association with the SARPs:*

1. **Forewords**
   
2. **Introductions**
   
   Comprise of explanatory material introduced at the beginning of parts, chapters or sections of the Annex to assist in the understanding of the application of the text.

3. **Notes**
   
   Included in the text, where appropriate, to give factual information or references bearing on the Standards or Recommended Practices in question, but not constituting part of the Standards or Recommended Practices.

4. **Attachments**
   
   Comprise of material supplementary to the Standards and Recommended Practices, or included as a guide to their application.
Annex 14 Vol. I contains:

- Standards and Recommended Practices (specifications) that prescribe the physical characteristics and obstacle limitation surfaces to be provided for at aerodromes, and

- certain facilities and technical services normally provided at an aerodrome.

It is not intended that these specifications limit or regulate the operation of an aircraft.
Annex 14 Vol. I does not contain:

- specifications relating to the overall planning of aerodromes (such as separation between adjacent aerodromes or capacity of individual aerodromes) or to economic and other non-technical factors that need to be considered in the development of an aerodrome. Information on these subjects is included in the Airport Planning Manual, Part 1.

- Specifications on aerodrome facilities related to aviation security [However, aviation security is an integral part of aerodrome planning and operations. Annex 14, Vol. I contains several specifications aimed at enhancing the level of security at aerodrome.]
Chapter 1. General

1.1 Definitions

The meanings of specialised technical terms used in Annex 14.

Examples:

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 elevation. The elevation of the highest point of the landing area.

Certified aerodrome. An aerodrome whose operator has been granted an aerodrome certificate.

Safety management system. A systematic approach to managing safety including the necessary organizational structure, accountabilities, policies and procedures.

Take-off runway. A runway intended for take-off only.
Chapter 1. General

1.2 Applicability

- The specifications, unless otherwise indicated in a particular context, shall apply to all aerodromes open to public use in accordance with the requirements of Article 15 of the Convention.

- The specifications of Annex 14, Volume I, Chapter 3 shall apply only to land aerodromes.

- The specifications in this volume shall apply, where appropriate, to heliports but shall not apply to stolports.
Chapter 1. General

1.3 Common Reference Systems

- **Horizontal reference system:**
  World Geodetic System - 1984 (WGS-84) shall be used as the horizontal (geodetic) reference system.

- **Vertical reference system**
  Mean sea level (MSL) datum shall be used as the vertical reference system.

- **Temporal reference system**
  The Gregorian calendar and Coordinated Universal Time (UTC) shall be used as the temporal reference system.
Chapter 1. General

1.4 Certification of aerodromes

Aerodromes used for international operations are to be certified by the State responsible:

- according to Annex 14 specifications,
- through an appropriate regulatory framework, that has established certification criteria and requires a manual with pertinent aerodrome information, and
- that has a SMS in operation
1.5 Safety management

States shall establish:

- a safety programme in order to achieve an acceptable level of safety in aerodrome operations;
- the acceptable level of safety to be achieved by the aerodrome operators.

[ICAO Safety Management Manual (Doc 9859)]
Chapter 1. General

1.5 Safety management (continued)

States shall require, as part of their safety programme, that a certified aerodrome operator implements a safety management system acceptable to the State that, as a minimum:

- identifies safety hazards;

b) ensures that remedial action necessary to maintain an acceptable level of safety is implemented;

c) provides for continuous monitoring and regular assessment of the safety level achieved; and

d) aims to make continuous improvement to the overall level of safety.
Chapter 1. General

1.5 Safety management (continued)

- A safety management system shall clearly define lines of safety accountability throughout a certified aerodrome operator, including a direct accountability for safety on the part of senior management.
Chapter 1. General

1.6 Airport design

- Architectural and infrastructure-related requirements for the optimum implementation of international civil aviation security measures shall be integrated into the **design and construction of new facilities and alterations to existing facilities** at an aerodrome.

[Note.— Guidance on all aspects of the planning of aerodromes including security considerations is contained in the Airport Planning Manual (Doc 9184), Part 1.]

**Recommendation.**— *The design of aerodromes should take into account, where appropriate, land use and environmental control measures.*

[Note.— Guidance on land – use planning and environmental control measures is contained in the Airport Planning Manual, (Doc 9184), Part 2.]
1.7 Reference code

- 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.

[Table 1-1 Annex 14 Vol. I, Page 1-8]
Chapter 1.   General

1.7   Reference code (continued)
Chapter 1. General

1.7 Reference code (continued)

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

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<td>2</td>
<td>800 m up to but not including 1 200 m</td>
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<td>3</td>
<td>1 200 m up to but not including 1 800 m</td>
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<td>4</td>
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a. Distance between the outside edges of the main gear wheels.
## 1.7 Reference code (continued)

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