



ADCI TF/1-PPT/5

AN INTRODUCTION TO PANS-AERODROMES (Doc 9981)

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PANS - AERODROMES



REFERENCES:

ANWP-8322

ANWP-8379

ANWP-8669 (not available)

AN Min 179-4

AN Min 180-7

AN Min 187-8

BACKGROUND



GENESIS:

- **ANNEX 14, VOL I PERCEIVED TO BE A DESIGN DOCUMENT**
- **APPLICABLE FOR NEW AERODROMES**
- **FOR EXISTING AERODROMES, PANS-AERODROMES IS REQ'D TO ADDRESS AERODROME OPERATIONAL ISSUES**
- **MITIGATE NEED TO FREQUENTLY AMEND ANNEX 14**

BACKGROUND



WHAT IS A

PROCEDURES FOR AIR NAVIGATION SERVICES

a.k.a

PANS?

BACKGROUND



CURRENTLY 4 ICAO PANS:

- PANS ATM - 1946
- PANS OPS – 1961
- PANS ABC - 1964
- PANS TRAINING - 2006

ICAO REQUIREMENTS



DOC 8143 – DIRECTIVES TO AIR NAVIGATION MEETINGS & RULES OF PROCEDURE

FORMULATION OF PROPOSALS FOR INT'L SARPS AND *PROCEDURES FOR AIR NAVIGATION SERVICES (PANS)*

- **STANDARDS**
- **RECOMMENDED PRACTICES**
- **PANS**

ICAO REQUIREMENTS



STANDARD

TO QUALIFY AS A STANDARD, THE SPECIFICATION MUST BE SUCH THAT ITS UNIFORM APPLICATION BY ALL CONTRACTING STATES IS NECESSARY FOR SAFETY OR REGULARITY OF INTERNATIONAL AIR NAVIGATION

ICAO REQUIREMENTS



RECOMMENDED PRACTICE (RP)

TO QUALIFY AS A RP, A SPECIFICATION MUST BE SUCH THAT ITS UNIFORM APPLICATION BY ALL CONTRACTING STATES IS CONSIDERED DESIRABLE FOR SAFETY, REGULARITY OR EFFICIENCY OF INTERNATIONAL AIR NAVIGATION.

ICAO REQUIREMENTS



PANS

TO QUALIFY FOR PANS STATUS, THE PROCEDURE SHALL BE AGREED AS SUITABLE FOR APPLICATION ON A WORLDWIDE BASIS, ALTHOUGH THE NEED TO APPLY IT IN A GIVEN AREA MAY BE SUBJECT TO REGIONAL AGREEMENT.

ICAO REQUIREMENTS



PANS

PANS COMPRISE OPERATING PRACTICES AS WELL AS MATERIAL CONSIDERED TOO DETAILED FOR SARPS. PANS AMPLIFY THE BASIC PRINCIPLES IN THE CORRESPONDING SARPS TO ASSIST IN THE APPLICATION OF THOSE SARPS.

ICAO REQUIREMENTS



DOC 8143 also describes:

- a) What are DEFINITIONS**
- b) What are APPENDICES**
- c) What are NOTES**
- d) What are ATTACHMENTS**
- e) What are dates of APPLICABILITY**

SCOPE

- **PANS ARE COMPLEMENTARY TO SARPS**
- **PANS SPECIFY IN GREATER DETAIL THAN IN THE SARPS, THE ACTUAL PROCEDURES TO BE APPLIED**

STATUS

- **PANS DO NOT HAVE THE SAME STATUS AS SARPS. WHILE SARPS ARE **ADOPTED** BY THE COUNCIL PURSUANT TO ARTICLE 37 OF THE ..**

ICAO REQUIREMENTS



.. CONVENTION, SUBJECT TO THE FULL PROCEDURE OF ARTICLE 90, PANS ARE **APPROVED BY THE COUNCIL AND RECOMMENDED TO STATES FOR WORLDWIDE APPLICATION.**

PANS MAY CONTAIN MATERIAL WHICH MAY EVENTUALLY BECOME SARPS WHEN IT HAS REACHED THE MATURITY AND STABILITY NECESSARY FOR ADOPTION.

ICAO REQUIREMENTS



IMPLEMENTATION

IMPLEMENTATION OF SARPS IS THE RESPONSIBILITY OF STATES

APPLIED IN ACTUAL OPERATIONS ONLY AFTER, AND INsofar AS, STATES HAVE ENFORCED THEM

UNIFORM APPLICATION OF PANS DESIRABLE, BUT LATITUDE IS PERMITTED FOR DEVELOPMENT OF DETAILED PROCEDURES TO SATISFY LOCAL CONDITIONS

ICAO REQUIREMENTS



PUBLICATION OF DIFFERENCES

PANS DO NOT CARRY THE STATUS AFFORDED TO STDS ADOPTED BY THE COUNCIL AS ANNEXES TO THE CONVENTION, AND THEREFORE, DO NOT COME WITHIN THE OBLIGATION IMPOSED BY ARTICLE 38 OF THE CONVENTION TO NOTIFY DIFFERENCES IN THE EVENT OF NON-IMPLEMENTATION

....HOWEVER.....

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**ATTENTION IS DRAWN TO PROVISION OF ANNEX 15
RELATED TO PUBLICATION IN THEIR NATIONAL
AERONAUTICAL INFORMATION PUBLICATION (AIP)
OF A LIST OF SIGNIFICANT DIFFERENCES BETWEEN
THEIR PROCEDURES**

PROMULGATION OF INFORMATION

**INFORMATION RELATING TO THE ESTABLISHMENT
AND WITHDRAWAL OF, CHANGES TO, FACILITIES,
SERVICES AND PROCEDURES AFFECTING ACFT OPS
PROVIDED ACCORDING TO PROCEDURES ...**

ICAO REQUIREMENTS



**...SPECIFIED IN THE PANS SHOULD BE NOTIFIED
AND TAKE EFFECT IN ACCORDANCE WITH ANNEX 15**

**NEXT, ANNEX 15 PROVISIONS ON PROMULGATION
OF DIFFERENCES....**

ICAO REQUIREMENTS



ANNEX 15 : AERONAUTICAL INFORMATION PUBLICATION

Chapter 4 : AIPS

§ 4.1.2 (Std) : AIP shall include in PART 1 – GEN:

- a)
- b)
- c) a list of significant differences between the national regulations and practices of the State and the related ICAO .. Procedures, given in a form that would enable a user to differentiate...

ICAO REQUIREMENTS



... readily between the requirements of the State and the related ICAO provisions;

d) the choice made by the State in each significant case where an alternative course of action is provided for in ICAO ..Procedures.

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APPENDIX 1 TO ANNEX 15: CONTENTS OF AIP

PART 1 – GEN

GEN 1.7 – Differences from ICAO SARPs and PROCEDURES

- A list of significant differences between national regulations and practices of the State and related ICAO provisions, including:
 - 1) provision affected (Annex (and PANS)...

ICAO REQUIREMENTS



.. and edition number, paragraph; and

2) difference in full text.

All significant differences must be listed under this subsection. All Annexes (and PANS) must be listed in numerical order even if there is no difference to an Annex (and PANS), in which case a NIL notification must be provided.

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Doc 8126 – AIS Manual, Chapter 5, section 5.8 describes what constitute “significant difference”

Sample copy of a listing of significant differences of a State with an ICAO PANS included.

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GEN 1.5

Area Navigation - RNAV
RNAV/(GNSS) Instrument Approach Procedures
Carriage of Radio and Radio Navigation Equipment

GEN 1.6

Summary of National Regulations and International Agreements/Conventions

UK Legislation
Channel Islands Legislation
Isle of Man Legislation
Landing and Take Off Near Open Air Assemblies
Designation of Hostile Environments for Commercial Air Transport Helicopter Operations in accordance with JAR-OPS 3

GEN 1.7

Differences from ICAO Standards, Recommended Practices and Procedures

Annex 1 - Personnel Licencing
Annex 2 - Rules of the Air
Annex 3 - Meteorological Service for International Aviation
Annex 4 - Aeronautical Charts
Annex 5 - Units of Measurement to be used in Air and Ground Operations
Annex 6 - Operation of Aircraft
Annex 7 - Aircraft Nationality and Registration Marks
Annex 8 - Airworthiness of Aircraft
Annex 9 - Facilitation
Annex 10 - Aeronautical Communications
Annex 11 - Air Traffic Services (Air Traffic Service, Flight Information Service and Alerting Service)
Annex 12 - Search and Rescue
Annex 13 - Aircraft Accident and Incident Investigation
Annex 14 - Aerodromes
Annex 15 - Aeronautical Information Services
Annex 16 - Environmental Protection
Annex 17 - Security
Annex 18 - The Safe Transport of Dangerous Goods by Air
Doc 4444 - Procedures for Air Navigation Services - Aircraft Management
Doc 8168 - Procedures for Air Navigation Services - Aircraft Operations

ICAO REQUIREMENTS



GEN 1-7 - 46
12 Jan 12

UK AIP

Doc 4444	Procedures for Air Navigation Services — Air Traffic Management (15th Edition)		
Reference	S-Standard / R-Recommended Practice	Difference	Remarks (Reasons For Difference)
Chapter 4 4.5.7.2.1		General Provisions for Air Traffic Service The phraseology 'Cleared via flight plan route' is not used in the UK.	
4.5.7.5.1		In addition, the following items are to be read back in full: taxi/holding instructions, approach clearances, altimeter settings, VDF information, type of ATS Surveillance Service being received and frequency changes. See GEN 3.3.3.	
4.6.1.5		At or above FL 280, speeds shall be expressed in multiples of 0.01 Mach; below FL 280, multiples of 10 kt shall be used.	
4.9		UK wake turbulence categories are different to ICAO. Pilots should refer to and be familiar with UK AIC P64/2009 Wake Turbulence, as amended.	
4.10.4.7		The operational unit of pressure in the UK is millibar (abbreviated 'mb').	
Chapter 5 5.3.3.2		Separation Methods and Minima Cruise climbs are not authorised by ATC in the UK.	
Chapter 6 6.3.2.4		Separation in the vicinity of Aerodromes When a departing aircraft on a SID is cleared to climb to a level higher than the initially cleared level or the level(s) specified in a SID, the aircraft shall climb directly to the cleared level, unless the SID vertical restrictions are reiterated as part of the clearance.	
Chapter 7 7.2		Procedures for Aerodrome Control Service The phraseology 'Standard taxi route' is not used for noise preferential reasons is currently not implemented in the UK.	
7.6.3.1.1.3		Standard taxi routes are not published in the UK. Taxi instructions will be issued individually by ATC.	
7.6.3.2.3.3		Meaning and is not used.	
7.14.1.3		In the UK the threshold visibility for Special VFR clearance is 1800 m.	
7.15		Aerodrome lighting shall be displayed from 15 minutes before any ETA and until 15 minutes after any ATD as follows: a. By day: High intensity systems, where installed on the runway to be used, whenever the visibility is less than 5 km and/or the cloud base is less than 700 ft; b. By night: Irrespective of weather conditions.	
Chapter 8 8.6.5.1 (b)		ATS Surveillance Services Except in the approach phase, the purpose and extent of initial vectors will not be given by controllers. Aircraft in receipt of vectors and subsequently experiencing radio failure must follow the radio failure procedure notified at ENR 1.1.3.	
8.6.5.1 (c)		Controllers will endeavour to keep aircraft in receipt of vectors not less than 2 nm from the boundary of controlled airspace.	
8.7.3.2 (b)		Unless wake turbulence spacing is required, 2.5 nm spacing on final approach may be used between successive aircraft arriving at London Heathrow. Pilots should be aware that this spacing may be applied up to 20 nm from the threshold. Further details are notified in AIP EGLL-AD-2.20.	
8.7.3.4		UK wake turbulence categories are different to ICAO. Pilots should refer to and be familiar with UK AIC P64/2009 Wake Turbulence, as amended.	

AMDT 001/12

Civil Aviation Authority

Ref	Std/RP	Difference	Remarks (Reasons for difference)
7.6.3.1.1.3		Std taxi routes are not published in the UK. Taxi instructions will be issued individually by ATC	



PANS-AERODROMES, 1 st Edition (Doc 9981)

PANS – AERODROMES (Doc 9981)



1st Edition of Doc 9981:

Addresses issues identified by the USOAP audits in the areas of:

- How to certificate an aerodrome
- How to undertake a safety assessment as part of a SMS
- How to conduct an aerodrome compatibility study to assess any proposed change to the operation of the aerodrome

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TABLE OF CONTENTS

FOREWARD

CHAPTER 1 – DEFINITIONS

CHAPTER 2 – CERTIFICATION OF AERODROMES

CHAPTER 3 – SAFETY ASSESSMENT

CHAPTER 4 – AERODROME COMPATIBILITY

PANS – AERODROMES (Doc 9981)



FOREWARD

1. Introduction
2. Scope and Purpose
3. Status
4. Implementation
5. Publication of differences
6. Contents of the document

PANS – AERODROMES (Doc 9981)



Scope and Purpose

The material in PANS-Aerodromes address 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 should be reviewed periodically to assess their continued validity. The PANS-Aerodromes is not intended to substitute nor circumvent the provisions contained in this Annex. It is expected that new infrastructure on an existing aerodrome or a new aerodrome will fully comply with the requirements in this Annex that will permit unrestricted operations.

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CHAPTER 2 – CERTIFICATION OF AERODROMES

- **General**
- **Aerodrome Manual**
- **Initial Certification**
- **Aerodrome Safety Coordination**
- **Continued Aerodrome Safety Oversight**

2 Appendices

3 Attachments

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Appendix 1 – Technical Inspections and On-site verification

Appendix 2 - Critical data related to safety occurrence reported at aerodromes for the monitoring of safety

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Attachment 1 – List of possible subjects covered in an Aerodrome Manual

Attachment 2 - Checklist for the acceptance of an Aerodrome Manual

Attachment 3 - Initial Certification Process

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CHAPTER 3 – SAFETY ASSESSMENT

- Introduction
- Scope & applicability
- Basic considerations
- Safety assessment methodologies
- Approval or acceptance of a safety assessment
- Promulgation of safety information

3 Attachments

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Attachment 1 – List of References

Attachment 2 – Safety assessment flowchart

Attachment 3 - Safety assessment methods

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Important note concerning the use of references

The Attachments contains a list of references documentation and examples of safety assessments ... undertaken previously that may be helpful to identify similar situations to the one being assessed. However, caution should be exercised in considering the applicability of these assessments to other situations, as each safety assessment and its resulting alternative measures are unique to the location and scope being assessed. Their indiscriminate use may result in operational procedures and operating restrictions inappropriate to application in the subject area.

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CHAPTER 4 – AERODROME COMPATIBILITY

- Introduction
- Impacts on aerodrome infrastructure
- Physical characteristics of aerodromes
- Obstacle restrictions
- Change of aerodrome due to all weather categories

2 Attachments – List of references, selected commonly operated aeroplane characteristics

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Physical characteristics of aerodromes

Runways	Taxiways
Length	Excursion
Width	Curved taxiway
Shoulder	Rwy/twy separation dist.
Turnpad	Twy/twy separation dist.
Strip	Twy/taxilane separation dist.
RESA	Shoulders
Etc.	Etc.

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For each issue:

Introduction – background information, rationale, reference to ICAO documents

Challenges - identify possible issues based on experience, operational judgment and analysis of hazards

Potential solutions – list possible solutions and determine appropriate risk mitigation measures to be implemented

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Runway/taxiway minimum separation distances

Rationale:

To ensure that an aeroplane running off or overflying a runway does not collide with another aeroplane on a parallel taxiway.

Basis:

Wing of an aeroplane centred on a parallel taxiway remaining clear of the associated runway strip/

Formula: $\frac{1}{2}$ strip width + $\frac{1}{2}$ wing span Code F: 150 + 40 = 190 m

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Challenges

- **risk of a collision of an aeroplane on the taxiway that infringers the runway strip**
- **risk of a collision between an aeroplane running off a taxiway and an object on the aerodrome**
- **risk of a collision between an aeroplane leaving the runway and an object on the aerodrome**
- **possible ILS signal interference due to a taxiing or stopped aeroplane**

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Causes and accident factors

- **Human factors (crew, ATS)**
- **Meteorological conditions (reduced visibility, wind)**
- **Aeroplane mechanical failure (hydraulics, engine)**
- **Surface conditions (standing water, loss of control on ice-covered surfaces, loss of μ)**
- **Aeroplane size and characteristics (esp. wingspan)**

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Potential solutions (singly/combination/not in particular order and not exhaustive)

- **Place restriction on wingspan of aeroplane using the // taxiway or on the runway if unrestricted rwy or txy operation is desired**
- **Change taxiway routing**
- **Tactical control of aerodrome movements such as A-SMGCS**

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Proposed amendments to Annex 14, Vol I:

- **Additional notes to Chapter 1 *Introductory Note*, paras 1.4.1, 1.4.4 referencing PANS-Aerodromes**
- **New section 1.8 to Chapter 1 introducing two Standards permitting the use of PANS-Aerodromes**

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Schedule:

ANC preliminary review – Nov 2012

State letter consultation – Q1 2013

**ANC final review and approval of PANS-Aerodromes
- Q3/Q4 2013**

**Council's adoption of proposed amendments to Annex
14, Vol I - November 2014**

**PANS-Aerodromes becomes applicable on the same
date as any associated SARPs amendment**

THE END

