Procedures for Air Navigation Services — Aerodromes (PANS-AGA)

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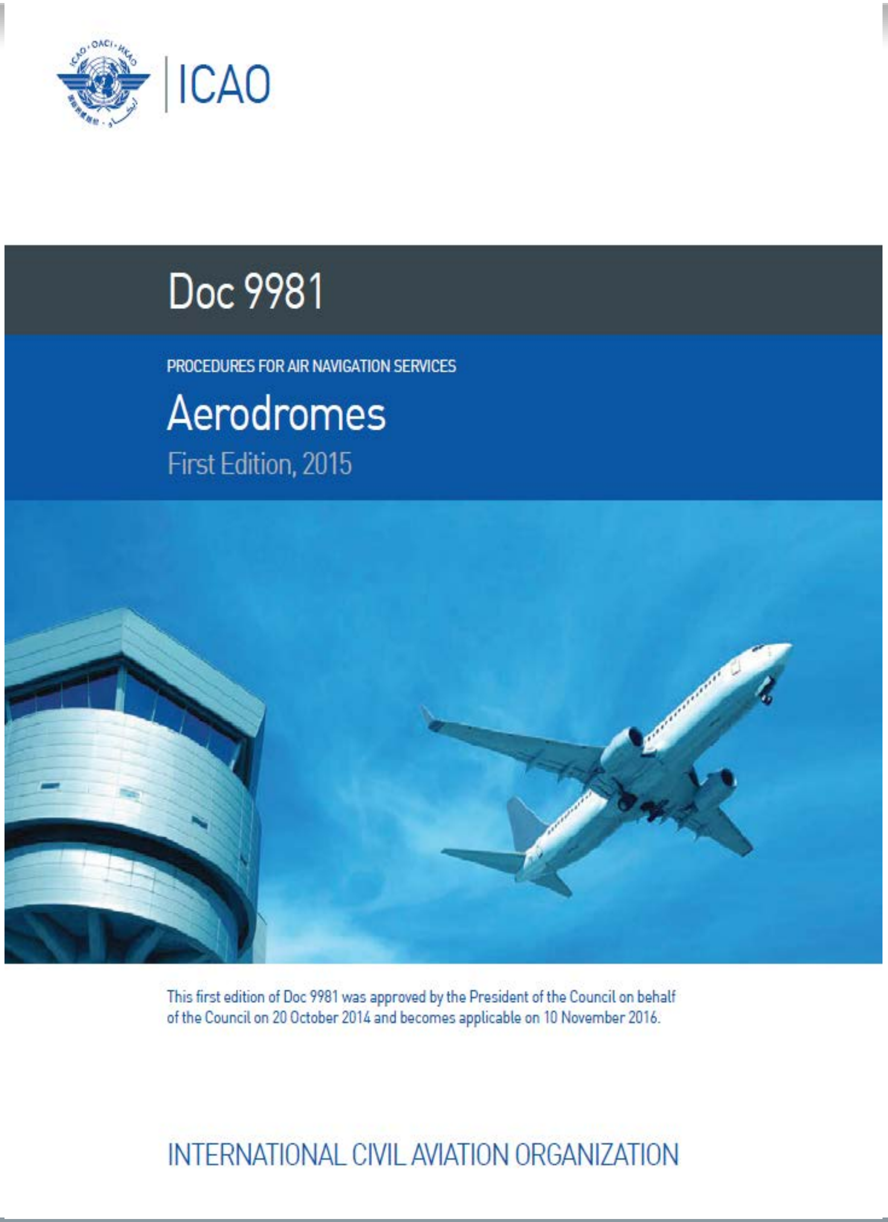

Introduction

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SCOPE AND PURPOSE

- The PANS-AGA are complementary to the SARPs in Annex 14, Volume I.
- PANS-AGA specify procedures to be applied by both aerodrome regulators and operators for:
  - initial aerodrome certification
  - aerodrome compatibility studies

Status

- The PANS-Aerodromes do not substitute nor circumvent the provisions contained in Annex 14, Volume I.
- PANS-AGA is designed for the use of the procedures and methodologies to assess the operational issues faced by existing aerodromes
- Do not have the same status as SARPs.

Priority areas identified by the ICAO Universal Safety Oversight Audit Programme. Among top non-satisfactory areas:

Aerodrome certification

CAA have not developed/published guidelines on AE /Risk assessments and its evaluation for granting exemptions

Aerodrome operators have not implemented SMS as part of the AC requirement

CAA don´t ensure that runway friction measurements are complete,

RESAs, periodic testing of AEP (including fire drills)

Lack of Surveillance programme , Training in specialized areas (RFF, Wildlife hazard, etc.)

Implementation

- The implementation of procedures is the responsibility of CAAs;
- The PANS AGA do not fall under the obligation imposed by Article 38 of the Convention to notify differences in the event of non-implementation.
- However, there is a provision in Annex 15 — *AIS*, related to the publication in State´s AIP of lists of significant differences.

Chapter 1 - Definitions

- ***Compatibility study.*** A study undertaken by the aerodrome operator to address the impact of introducing an aeroplane type/model new to the aerodrome, and may include one or several safety assessments.
- ***Critical aeroplane.*** The type of aeroplane which is the most demanding for the relevant elements of the physical infrastructure and the facilities for which the aerodrome is intended.
- ***Safety manager.*** The responsible individual and focal point for the implementation and maintenance of an effective SMS. The safety manager directly reports to the accountable executive.

Chapter 2 - CERTIFICATION OF AERODROMES

The scope of certification includes at least the subjects below:

a) ***Compliance of the aerodrome infrastructure*** with the applicable regulations for the operations of the aerodrome;

b) ***The operational procedures*** and their day-to-day application, concerning:

1) aerodrome data and reporting;
2) access to the movement area;
3) aerodrome emergency plan;
4) rescue and fire fighting (RFF);
5) inspection of the movement area;
6) maintenance of the movement area;

Chapter 2 - CERTIFICATION OF AERODROMES

8) visual aids and aerodrome electrical systems;
9) safety during aerodrome works;
10) apron management;
11) apron safety;
12) vehicles on the movement area;
13) wildlife hazard management;
14) obstacles;
15) removal of a disabled aeroplane;
16) low visibility operations; and
17) compliance of the SMS with applicable regulations.

INITIAL CERTIFICATION

Compliance of the aerodrome is assessed through:

a) technical inspections of the infrastructure and its equipment;

b) review of the aerodrome manual and supporting documentation and acceptance of its relevant safety parts; and

c) on-site verification of the aerodrome operator's procedures, its organization and its SMS based upon the contents of the aerodrome manual.

Aerodrome technical inspections

The technical inspections of the aerodrome should include, as a minimum:

a) an inspection of the infrastructure, obstacle limitation surfaces (OLS), visual and non-visual aids and aerodrome & equipment for the use of aeroplanes;

b) an inspection of the RFF services; and

c) an inspection of wildlife hazard management.

Several options to carry out these inspections

- ***Option 1**: full inspections by the CAA*
- At aerodromes where an *SMS is not fully operational*, full inspections should be conducted by the CAA
- If technical inspections have previously been conducted, the CAA can undertake a follow-up inspection

Several options to carry out these inspections

Option 2: demonstration of compliance by the AD

- At AD where an *SMS has been fully implemented*, the AD should ensure that the requirements in the checklists provided by the CAA have been complied with.
- The CAA should then analyze the documents completed by the applicant and ***conduct sample on-site checks*** according to this analysis

CHAPTER 3 - SAFETY ASSESSMENTS FOR AERODROMES

A certified aerodrome operator implements an SMS acceptable to the State that, as a minimum.

a) identifies safety hazards;

b) ensures that remedial action necessary to maintain safety is implemented;

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

d) aims to make continuous improvement to the overall safety of the aerodrome.

SAFETY ASSESSMENTS FOR AERODROMES

Items to be considered when conducting a safety assessment:

a) aerodrome layout, including runway configurations; runway length; taxiway, taxi lane and apron configurations; gates; jet bridges; visual aids; and the RFF services infrastructure and capabilities;

b) types of aircraft, and their dimensions and performance characteristics, intended to operate at the aerodrome;

c) traffic density and distribution;

SAFETY ASSESSMENTS FOR AERODROMES

d)obstacles or hazardous activities at or in the vicinity of the aerodrome;

e) planned construction or maintenance works at or in the vicinity of the aerodrome;

f) any local or regional hazardous meteorological conditions (such as wind shear); and

g) airspace complexity, ATS route structure and classification of the airspace, which may change the pattern of operations or the capacity of the same airspace.

SAFETY ASSESSMENT PROCESS

A safety assessment is initially composed of 4 basic steps:

a) definition of a safety concern and identification of the regulatory compliance;
b) hazard identification and analysis;
c) risk assessment and development of mitigation measures; and
d) development of an implementation plan for the mitigation measures and conclusion of the assessment.

APPROVAL OR ACCEPTANCE OF A SAFETY ASSESSMENT

- The CAA analyses and verifies that:

  a) appropriate coordination has been performed between the concerned stakeholders;

  b) the risks have been properly identified and assessed, based on documented arguments;

  c) the proposed mitigation measures adequately address the risk; and

  d) the time frames for planned implementation are acceptable.

PROMULGATION OF SAFETY INFORMATION

- Adequate dissemination of information to interested parties, information that affects the current integrated aeronautical information package (IAIP) or other relevant safety information is:

  a) promulgated in the relevant section of the IAIP or automatic terminal information service (ATIS); and

  b) published in the relevant aerodrome information communications through appropriate means.

Chapter 4 - AERODROME COMPATIBILITY

a) the aeroplane operator submits a request to the aerodrome operator;

b) the aerodrome operator identifies possible means of accommodating the aeroplane type/subtype including access to movement areas and, if necessary, considers the feasibility and economic viability of upgrading the aerodrome infrastructure; and

c) Both discuss the aerodrome operator’s assessment.

COMPATIBILITY STUDY

The following procedures should be included in the aerodrome CS:

a) identify the aeroplane's physical and operational characteristics;

b) identify the applicable regulatory requirements;

c) establish the adequacy of the aerodrome infrastructure and facilities vis-à-vis the requirements of the new aeroplane;

d) identify the changes required to the aerodrome;

e) document the compatibility study; and

f) perform the required safety assessments identified during the compatibility study

RESULT OF A COMPATIBILITY STUDY

a) the aerodrome operator with the necessary information in order to make a decision on allowing the operation of the specific aeroplane;

b) the aerodrome operator with the necessary information in order to make a decision on the changes required to the aerodrome infrastructure and facilities to ensure safe operations at the aerodrome; and

c) the State with the information which is necessary for its safety oversight and the continued monitoring of the conditions specified in the aerodrome certification.

IMPACT OF AEROPLANE CHARACTERISTICS ON THE AERODROME INFRASTRUCTURE

- The aeroplane’s physical characteristics may influence the aerodrome dimensions, facilities and services in the movement area
- Aeroplane operational characteristics should be included in the evaluation process; and
- The aerodrome physical characteristics

PHYSICAL CHARACTERISTICS OF AERODROMES

Runway length:

- *Runway length is a limiting factor on aeroplane operations. Longitudinal slopes can have an effect on aeroplane performance*

Runway width:

- The main issue associated with available runway width is the risk of aeroplane damage and fatalities associated with an aeroplane veering off the runway during take-off, rejected take-off or during the landing

Potential solutions

- Potential solutions can be developed:

a) paved inner shoulders of adequate bearing strength to provide an overall width of the runway and its (inner) shoulders of the recommended runway width according to the reference code;

b) paved/unpaved outer shoulders with adequate bearing strength to provide an overall width of the runway and its shoulder according to the reference code;

c) additional runway centre line guidance and runway edge markings; and

d) increased full runway length FOD inspection, when required or requested.

Runway shoulders - Potential solutions

- Runway shoulders have three main functions:

  a) to minimize any damage to an aeroplane running off the runway ;

  b) to provide jet blast protection and to prevent engine FOD ingestion; and

  c) to support ground vehicle traffic, RFF vehicles and maintenance vehicles.

- Potential solutions:

  a) Excursion onto the runway shoulder. Provide the suitable shoulder

  b) Jet blast.

  c) RFF vehicles.

  d) Additional surface inspections. It may be necessary to adapt the inspection programme for FOD detection.

Runway strip dimensions

- A runway strip is an area enclosing a runway and any associated stopway. Its purpose is to:

  a) reduce the risk of damage to an aeroplane running off the runway by providing a cleared and graded area which meets bearing strength requirements; and

  b) protect an aeroplane flying over it during landing, balked landing or take-off

Challenges

- Operational restrictions may be applied to the type of approach and low visibility operations that fit the available ground dimensions, while also taking into account:

  a) runway excursion history;

  b) friction and drainage characteristics of the runway;

  c) runway width, length and transverse slopes;

  d) navigation and visual aids available;

  e) relevance in respect of take-off or aborted take-off and landing;

  f) scope for procedural mitigation measures; and

  g) accident report.

Potential solutions

a) improving runway surface conditions

b) ensuring that accurate and up-to-date meteorological information is available and that information on runway conditions and characteristics is passed to flight crews in a timely manner;

c) recording, prediction and dissemination of wind data, including wind shear, and any other relevant meteorological information;

d) upgrading the visual and instrument landing aids to improve the accuracy of aeroplane delivery at the correct landing position on RWYs

RUNWAY END SAFETY AREA (RESA)

- The following aspects have to be taken into account:

  a) the nature and location of any hazard beyond the runway end;

  b) the topography and obstruction environment beyond the RESA;

  c) the type of aeroplanes and level of traffic at the aerodrome and actual or proposed changes to either;

  d) overrun/undershoot causal factors;

  e) friction and drainage characteristics of the runway which have an impact on runway susceptibility to surface contamination and aeroplane braking action;

RUNWAY END SAFETY AREA (RESA)

f) navigation and visual aids available;

g) type of approach;

h) runway length and slope, in particular, the general operating length required for take-off and landing versus the runway distances available, including the excess of available length over that required;

i) the location of the taxiways and runways;

j) aerodrome climatology, including predominant wind speed and direction and likelihood of wind shear; and

k) aerodrome overrun/undershoot and veer-off history.

Potential solutions

a) restricting the operations during adverse hazardous meteorological conditions (such as thunderstorms);

b) defining, in cooperation with airlines, hazardous meteorological conditions and publishing such information appropriately;

c) improving an aerodrome's database of operational data, detection of wind data, including wind shear and other relevant meteorological information;

d) ensuring that accurate and up-to-date meteorological information, current runway conditions and other characteristics are detected and notified to flight crews in time;

Potential solutions (Cont.)

e) improving runway surfaces in a timely manner (e.g. friction measurement and drainage system), particularly when the runway is contaminated;

f) removing rubber build-up on runways;

g) repainting faded runway markings and replacing inoperative runway surface lighting;

h) upgrading visual and instrument landing aids to improve the accuracy of aeroplane delivery at the correct landing position on runways (including the provision of ILSs);

i) reducing declared runway distances in order to provide the necessary RESA;

j) installing suitably positioned and designed arresting systems EMAS;

k) increasing the length of a RESA and/or minimizing the potential obstruction in the area beyond the RESA; and

l) publishing provisions, including the provision of an arresting system, in the AIP.

RUNWAY AND TAXIWAY MINIMUM SEPARATION DISTANCES

Challenges

a) the possible collision between an aeroplane running off a taxiway and an object (fixed or mobile) on the aerodrome;

b) the possible collision between an aeroplane leaving the runway and an object (fixed or mobile) on the aerodrome or the risk of a collision of an aeroplane on the taxiway that infringes on the runway strip; and

c) possible ILS signal interference due to a taxiing or stopped aeroplane.

RUNWAY AND TAXIWAY MINIMUM SEPARATION DISTANCES

Causes and accident factors can include:

a) Human Factors (crew, ATS);

b) hazardous meteorological conditions (such as thunderstorms and wind shear);

c) aeroplane mechanical failure (such as engine, hydraulic system, flight instruments, control surfaces and autopilot);

d) surface conditions (standing water, loss of control on ice-covered surfaces, friction coefficient);

e) lateral veer-off distance;

f) aeroplane position relative to navigation aids, especially ILS;

g) aeroplane size and characteristics (especially wingspan).

Potential solutions

Potential solutions:

a) place a restriction on the wingspan of aeroplanes using the parallel taxiway or on the runway, if continued unrestricted taxiway or runway operation is desired;

b) consider the most demanding length of aeroplane that can have an impact on runway/taxiway separation and the location of holding positions (ILS);

c) change taxiway routing so that the required runway airspace is free of taxiing aeroplanes; and

d) employ tactical control of aerodrome movements.

Thank You

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