



# THE ICAO MODEL

ADCI TF/1-PPT/1

# AERODROME CERTIFICATION

**Ir. Joseph CHEONG,  
M.I.E.(Aust), M.I.E.(Msia),  
P.E., Int P.E., APEC Eng.  
Technical Officer,  
Aerodromes Section,  
ICAO Montreal**



# TOPICS

- ◆ THE AVIATION SYSTEM
- ◆ AERODROME CERTIFICATION – WHY NEEDED
- ◆ INTERNATIONAL OBLIGATIONS
- ◆ AERODROME CERTIFICATION – THE TOOLS
- ◆ ICAO Doc 9774 – AN/969
- ◆ QUESTIONS

*“Safety is the raison d’être of ICAO”*

# THE AVIATION SYSTEM



Aviation is a *system* that needs a systematic approach to its regulation, as well as operation.



# THE AVIATION SYSTEM



## THE AERODROME WITHIN A TOTAL SYSTEM CONCEPT...

# THE AVIATION SYSTEM



A “LICENSED” person (*Annex 1*)

following

“THE RULES OF THE AIR” (*Annex 2*)

utilizing

“THE METEOROLOGICAL SERVICES” (*Annex 3*)

and

“AERONAUTICAL CHARTS” (*Annex 4*)

# THE AVIATION SYSTEM



Cont'd..

and the proper

“UNITS OF MEASUREMENT” (*Annex 5*)

“OPERATING” according to (*Annex 6*) with

a “REGISTERED” (*Annex 7*) and

“AIRWORTHY” (*Annex 8*) aircraft;

crossing borders and availing himself/herself of the

“FACILITATION” (*Annex 9*).

# THE AVIATION SYSTEM



Cont'd..

He/She is using

“AERONAUTICAL COMMUNICATIONS” (*Annex 10*)

to contact

the “AIR TRAFFIC SERVICES” (*Annex 11*)

for separation and will hopefully not need

“SEARCH AND RESCUE” (*Annex 12*).

# THE AVIATION SYSTEM



**Cont'd..**

**Drawing wisdom from the work of  
the “ACCIDENT AND INCIDENT INVESTIGATION”  
(Annex 13) team.**

**Before take-off from  
an “AERODROME” (Annex 14),  
he/she will have used  
the “AERONAUTICAL INFORMATION SERVICES”  
(Annex 15).**

# THE AVIATION SYSTEM



Cont'd..

He/She will depart in an  
“ENVIRONMENTALLY” (*Annex 16*)  
acceptable aircraft after the  
passengers have been  
“SECURITY” checked (*Annex 17*) and any  
“DANGEROUS GOOD” (*Annex 18*)  
have been properly documented.

# THE AVIATION SYSTEM



## AERODROME

AIRFIELD SAFETY:

OPERATIONS, SERVICES, RFF, ENGNG,  
MAINT, OBSTACLES ETC. (Annex 14)

Local ATM  
Annex 11  
PANS-ATM

Local CNS  
Annex 10

Local MET  
Annex 3

ENVIRON  
Annex 18

Local AIS/MAP  
Annex 3  
Annex 15

FLT OPS  
Annex 6  
PANS-OPS

SECURITY  
Annex 17

# THE AVIATION SYSTEM



# THE AVIATION SYSTEM



# NEW LARGE AIRCRAFT



	Boeing 747-400	Airbus A380-100	Boeing 747-8/8F
Passengers	416	555	467
Wingspan	64.40 m	79.75 m	68.40 m
Length	71.00 m	72.60 m	76.40 m
Height	19.40 m	24.00 m	19.50 m
MTOW	400 tons	560 tons	440 tons

# THE AVIATION SYSTEM



## TODAY'S AVIATION ENVIRONMENT ....

- Large, global & complex industry
- Highly sophisticated technologies
- Reduced capacity of regulators to be THE expert across a whole range of disciplines/ specialties
- Highly complex, automated & integrated systems



# THE AVIATION SYSTEM

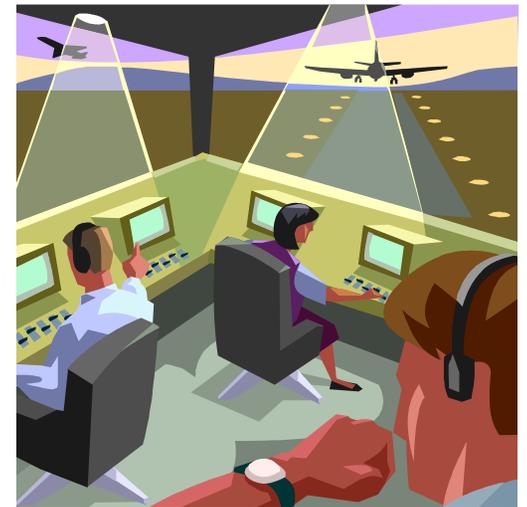


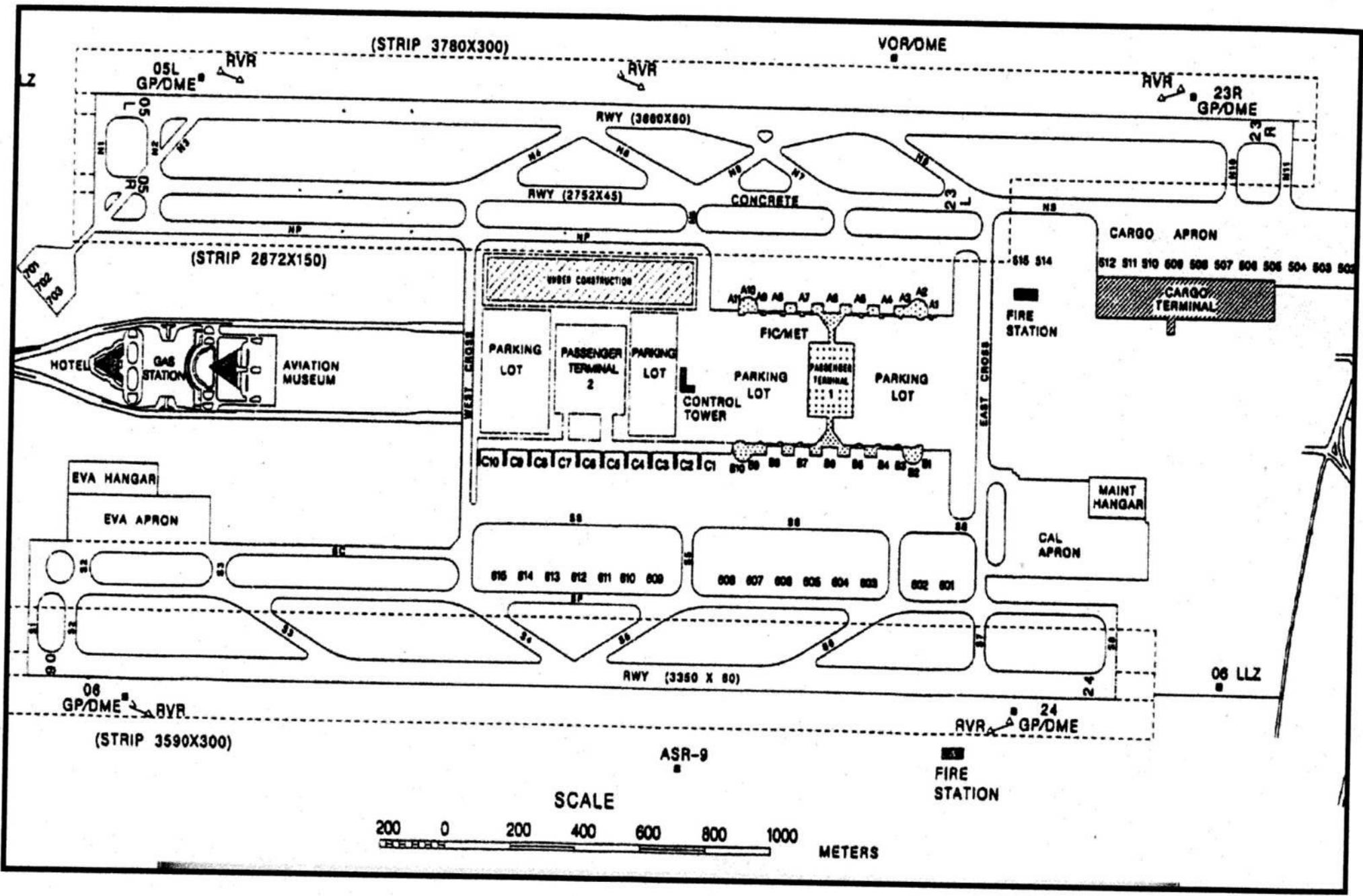
## TODAY'S AVIATION ENVIRONMENT ....

- **Increased failures: technology/human interface**
- **Greater commercial pressure - costs & time**
- **Greater public expectations on safety issues**

# Certification of Aerodromes

## Why Needed?





# Certification of Aerodromes Why Needed?



# Certification of Aerodromes Why Needed?



# Certification of Aerodromes Why Needed?



(RP PHOTO)



# Certification of Aerodromes Why Needed?



# CRASH FINDINGS



**“A number of items of the airport did not meet the level of internationally accepted standards and recommended practices”**

**“There was a lack of specified safety regulation monitoring organization and mechanism within the CAA that resulted in the absence of a mechanism to highlight conditions at the airport for twys and rwys lighting, marking & signage that did not meet internationally accepted safety standards & practices”**

# CRASH FINDINGS



**“There was a lack of safety oversight mechanism within CAA that could have provided an independent audit/assessment of the airport to ensure that its facilities met internationally accepted safety standards and practices”**

*Aviation Safety Council, xxx*

# CRASH FINDINGS

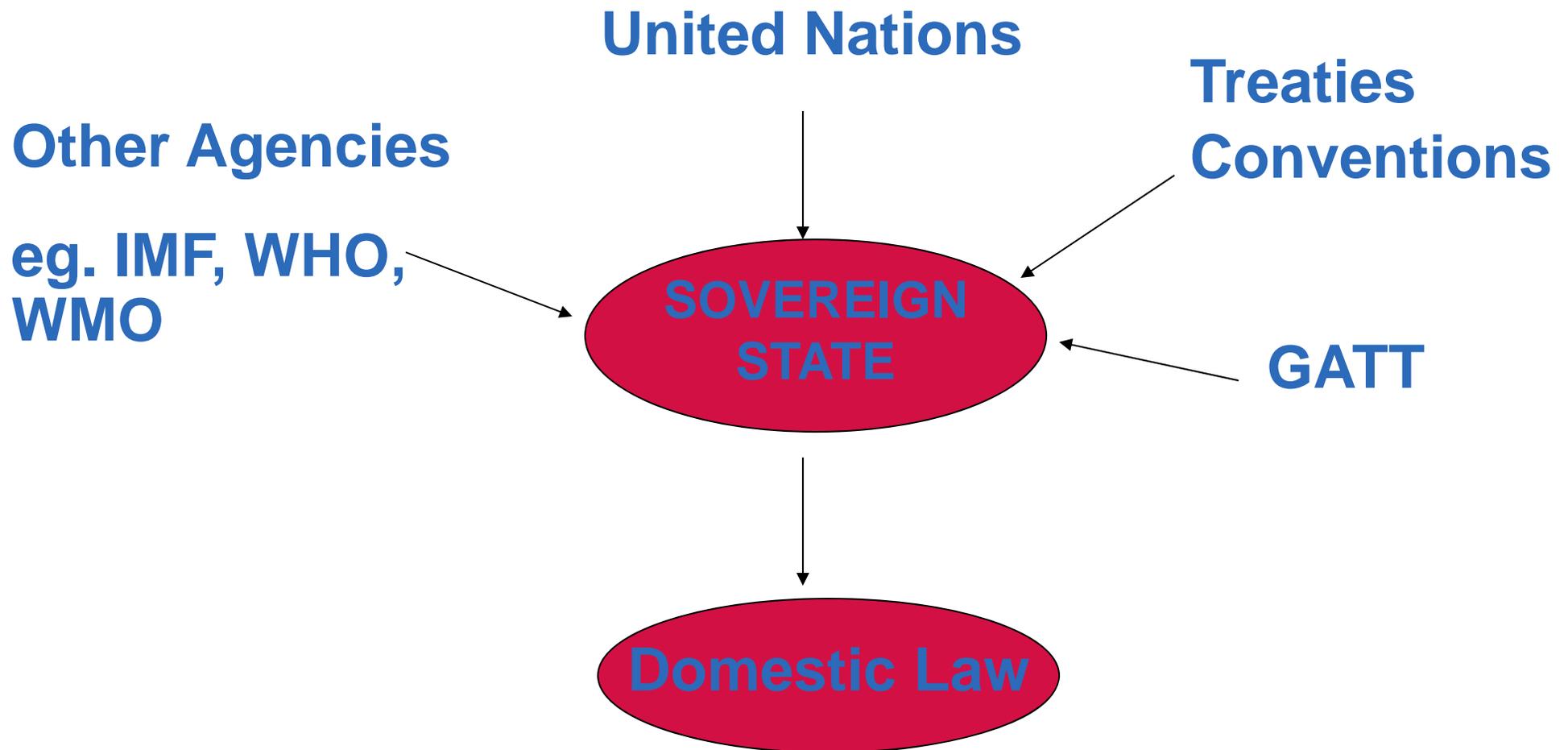


- **Aerodrome Safety**
- **Prevention of Accidents**
- **Reduction/Elimination of deficiencies**
- **Aerodrome Safety Management System**
- **CAA Aerodrome Safety Oversight and Certification**
- **ICAO USOAP Aerodrome Audits**

**<http://www.icao.int/cgi/safety.pl>**



# INTERNATIONAL OBLIGATIONS



# INTERNATIONAL OBLIGATIONS



## THE CHICAGO CONVENTION

- **Signed on 7 December 1944**
- **Currently 190 States ratified – one of world's most widely accepted international treaties**
- **Only global set of principles/rules governing international civil aviation**
- **Contains 96 Articles in 22 Chapters**

# INTERNATIONAL OBLIGATIONS



## THE CHICAGO CONVENTION (cont'd)

- Provides for the establishment of the International Civil Aviation Organization (ICAO)
- Gives Contracting States certain “RIGHTS” in exchange for meeting certain “OBLIGATIONS”

# THE CHICAGO CONVENTION



## STATES "RIGHTS"

- Uphold fundamental principles of Sovereignty of Contracting States (Article 1)
- Grants transit & landing rights for non-scheduled traffic (Article 5)
- Grants each State the right to reserve the traffic within its borders to its own airlines (Article 7)

# THE CHICAGO CONVENTION



## STATES "RIGHTS" (cont'd)

- Grants each "User" State the right to equitable treatment from a "Provider" State in terms of rules of entry to, transition, through and departure from that State's airspace and airports (Articles 11 & 15)
- Provides for mutual recognition of certificates of airworthiness, personnel licences etc (Article 33)

# THE CHICAGO CONVENTION



## STATES “OBLIGATIONS”

- **Each State agrees to give uniform treatment to aircraft from other States when in their airspace or using their airports (Articles 11 & 15)**
- **Each State agrees to provide airports and air traffic services in conformance with standards and practices established under the Convention (Article 28)**

# THE CHICAGO CONVENTION



## STATES “OBLIGATIONS” (cont’d)

- **Each State agrees to implement in their national regulations the International Standards and Recommended Practices (SARPs) and Procedures adopted by ICAO in order to ensure the highest practicable degree of uniformity (Article 37)**

# THE CHICAGO CONVENTION



## STATES “OBLIGATIONS” (cont’d)

- **Each State is required to notify ICAO immediately if it finds it impracticable to comply in all respects with any International Standard or Procedure (Article 38) – “filing of differences”**

# THE CHICAGO CONVENTION



## WHAT IF NON-COMPLIANT?

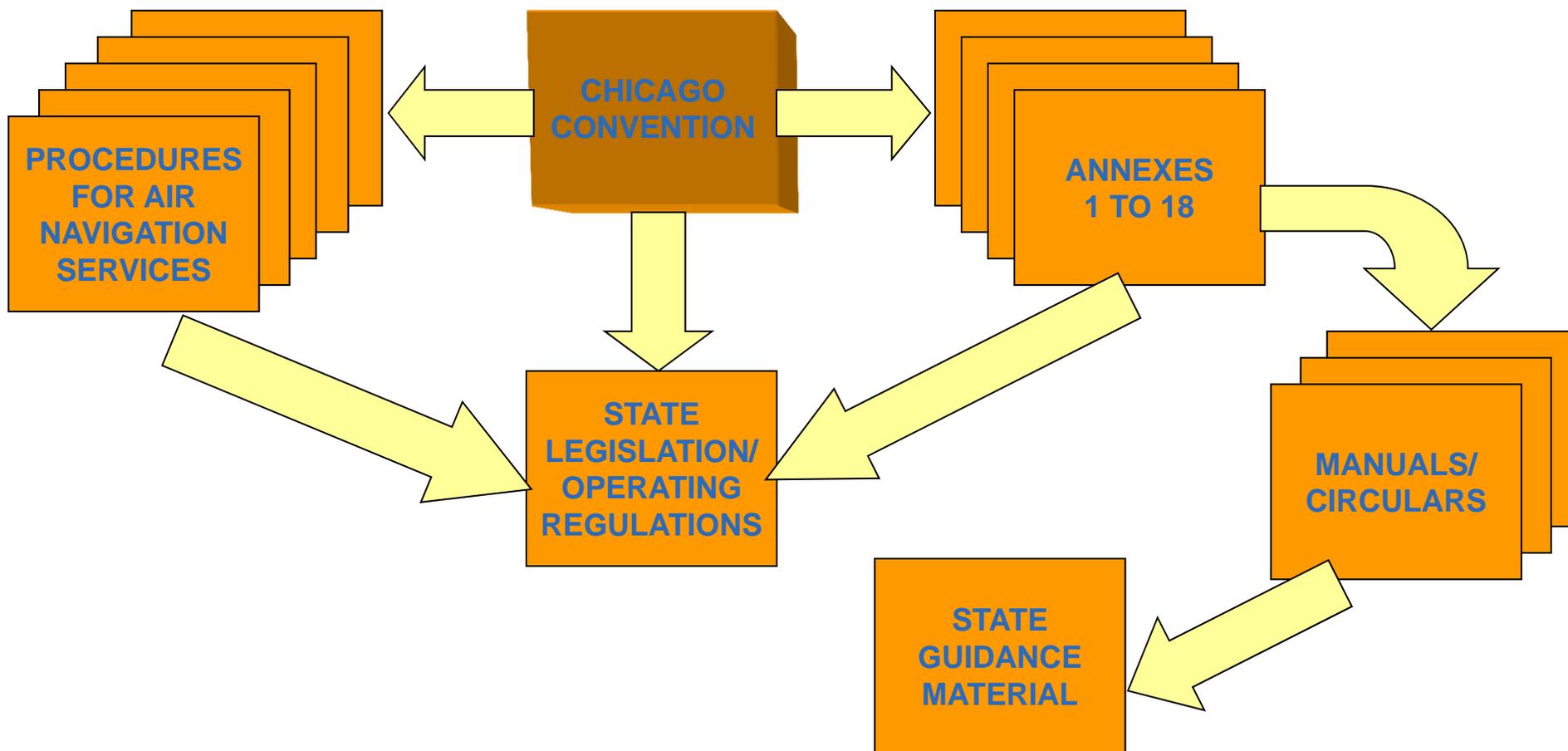
- **Article 37 – Adoption of Int’l SARPs**
- **Article 38 – Departure from Int’l SARPs**
- **Article 33 – Mutual Recognition of Certificates**
- **Article 54 – Reporting of Infractions to ICAO Council and Assembly**

# THE CHICAGO CONVENTION



- **Article 54 (j) – Report to Contracting States any infraction of this Convention as well as any failure to carry out recommendations or determination of the Council**
- **Article 54 (k) – Report to the Assembly any infraction of this Convention where a Contracting State has failed to take appropriate action within a reasonable time after notice of infraction**

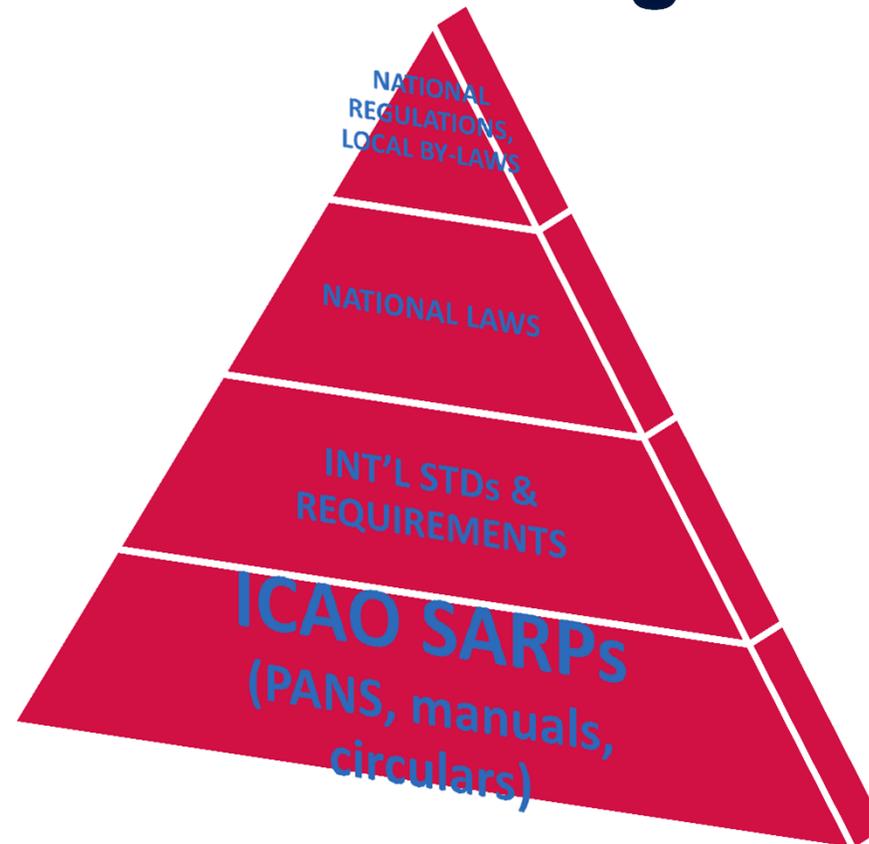
# HIERARCHY OF ICAO vs STATE DOCUMENTATION



# HIERARCHY OF ICAO vs STATE DOCUMENTATION



## The basis for regulation



# HIERARCHY OF ICAO vs STATE DOCUMENTATION



- **ICAO ANNEXES DIRECTED TO THE STATE**
- **CONTENTS OF ICAO ANNEXES MUST BE TRANSPOSED INTO NATIONAL REGULATIONS**
- **LICENSE PERSONNEL, CERTIFY AERODROMES & ORGANIZATIONS**
- **MONITOR LICENSED SUBJECTS FOR CONTINUED COMPLIANCE**

# TWO COMPLEMENTARY ROLES



**ICAO**



- **Develops principles and techniques to be adopted in Annexes**
- **Approves regional air navigation plans**



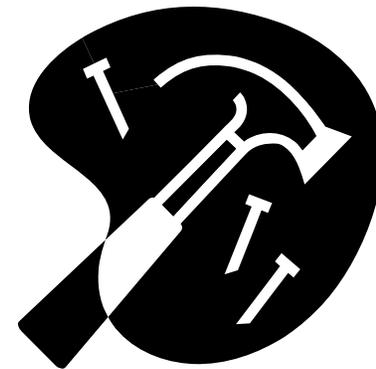
**STATES**

- **Apply Annex Standards**
- **Carry out oversight responsibilities**
- **Implement infrastructure according to regional plans**

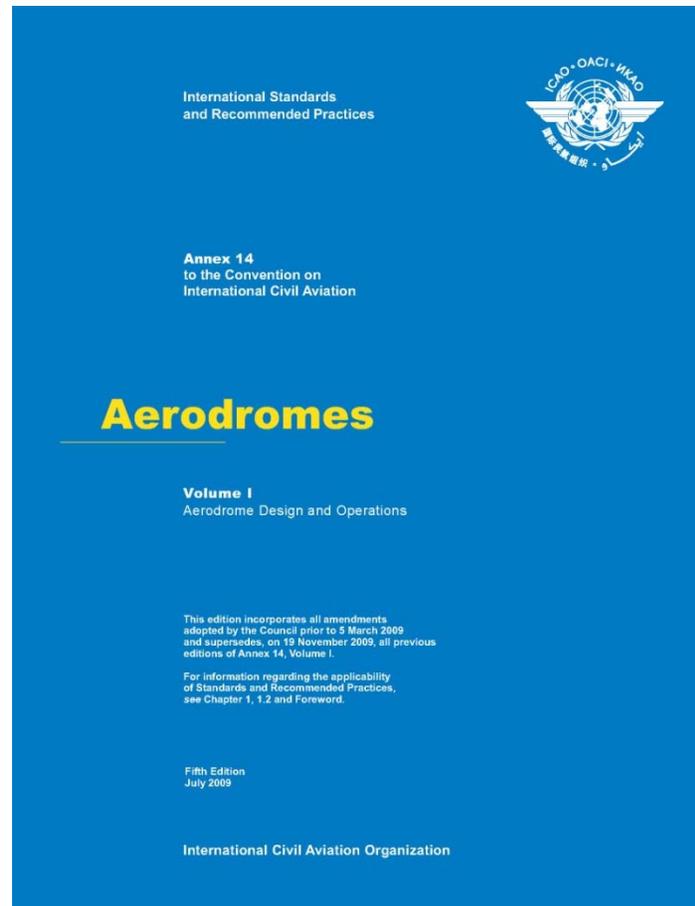
# Certification of Aerodromes



## The Tools



# Certification of Aerodromes





# Definition - STANDARD

“Any specification for physical characteristics, configuration, material, performance, personnel or procedure, the uniform application of which is recognized as necessary for the safety or regularity of int’l air navigation and to which Contracting State will conform in accordance with the Convention; in the event of impossibility of compliance, notification to the Council is compulsory under Article 38.”

# Definition – *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 int’l air navigation and to which Contracting State will endeavour to conform in accordance with the Convention.”***

# Certification of Aerodromes



- ✓ Aircraft are certificated
- ✓ Airlines are certified
- ✓ Pilots are licensed
- ✗ Nothing comparable for aerodromes in most States. Why not? How can you be sure of aerodrome operator competency and aerodrome operations safety?

# Certification of Aerodromes



**Purpose – a mechanism by which the regulatory authority (and ICAO) can be satisfied about aircraft SAFETY, with respect to an aerodrome and its local airspace**

- certification facilitates and formalises the CAA's obligation under the Convention for safety oversight and provision of adequate facilities and services**

# Certification of Aerodromes



- **Compliance with Annex 14 – obligation of States under the Convention**  
(Australia, Canada, UK, US and some other States implemented aerodrome certification/licensing long before ICAO Annex 14 Vol. 1 Amendment 4)
- **Necessary ? – a significant portion of air navigation deficiencies are in the aerodromes field**

# Certification of Aerodromes – The Tools



## Amendment 4 to Annex 14, Vol I

- **Adopted by Council in Mar 2001**
- **Applicable from 01 Nov 2001**
- **Cover other relevant Annexes for certifying airports**
- **Coordination with other service providers & agencies for a seamless safe operating environment**

# Certification of Aerodromes – The Tools



## Amendment 4 to Annex 14, Vol I

### § 1.3 - Certification of Aerodromes

- RP*** - *Aerodromes open to public use to be certified as per Annex 14 Vol I and other relevant ICAO specifications*
- Std** - Aerodromes used for int'l operations to be certified as from 27 Nov 2003

# Certification of Aerodromes – The Tools



- Std** - States' regulatory framework to establish the criteria for certification
  
- RP** - *Submission of an aerodrome manual as part of the application including an SMS in operation*
  
- Std** - SMS shall be in operation from 24 Nov 2005

# Certification of Aerodromes – The Tools



## Amendment 7 to Annex 14, Vol I

- **Adopted by Council in Mar 2005**
- **Applicable from 01 Nov 2005**

**Std - Submission of an aerodrome manual as part of the application including an SMS in operation**

# Certification of Aerodromes – The Tools



## Amendment 10 to Annex 14, Vol I

- **Adopted by Council in Mar 2009**
- **Applicable from 01 Nov 2009**

**Amendment in three key areas:**

# Certification of Aerodromes – The Tools



## 1) Expansion of Note to section 1.4 clarifying intent of aerodrome certification:

*“...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...”*

# Certification of Aerodromes – The Tools



**2) Inclusion of procedures in the regulatory framework for the certification of aerodromes, in para 1.4.3**

***(Procedures for Air Navigation Services – Aerodromes [PANS-Aerodromes])***

**3) promulgation of the status of aerodrome certification (in the AIP), in para 2.13.1**

# Certification of Aerodromes – The Tools



## ( consequential) Amendment 35 to Annex 15

- **Adopted by Council in Mar 2009**
- **Applicable from 19 Nov 2009**

### **Appendix 1. Contents of AIP**

#### **Part 3 – AERODROMES (AD)**

#### **AD 1. AERODROMES/HELIPORTS**

#### **AD1.5 Status of certification of aerodromes**

# Certification of Aerodromes – The Tools



## AD1.5 Status of certification of aerodromes

A list of aerodromes in the State, indicating the status of certification, including:

- 1) aerodrome name and ICAO location indicator;
- 2) date and if applicable, validity of certification;
- 3) remarks, if any.

# Certification of Aerodromes – The Tools



AIP  
State XXX

SAMPLE TEMPLATE

AD 1.5 -1  
19 NOV 2009

---

<i>Aerodrome/Location Indicator</i>	<i>Date/Validity of Certification</i>	<i>Remarks</i>
RKSI ( <u>abc</u> INTL)	19 NOV 2009 – 18 NOV 2010	Certified by CASA
RKSS ( <u>def</u> INTL)	19 NOV 2009, 1 year	Certified by CAA
RKPC ( <u>ghj</u> )	19 NOV 2009, 2 years	Certified by DCA
RKPK ( <u>klm</u> INTL)	19 NOV 2009, 3 years	Certified by CASA
RKTU ( <u>npq</u> INTL)	19 NOV 2009, 5 years	Certified by CASA
RKNY ( <u>wxy</u> INTL)	19 NOV 2009, perpetual	Joint Military/Civilian

*Remarks:*

# ICAO provisions related to aerodromes

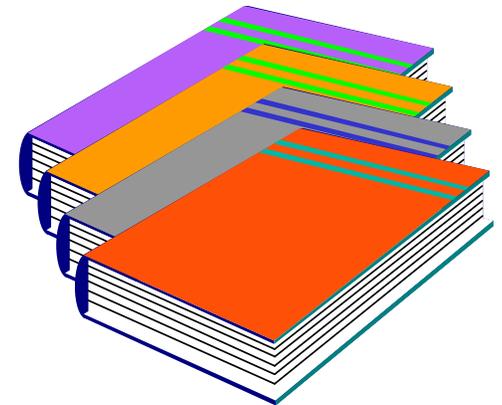


**Annex 14**

**Vol I : Aerodrome Design and Operations**

**Vol II : Heliports**

**Related ICAO specifications**



**Specifications are continuously updated to reflect the changing needs of the aviation industry**

# ICAO provisions related to aerodromes



## Manual on Certification of Aerodromes ICAO Doc 9774

- ICAO developed Manual for adoption or adaptation by States
- To assist States to effectively implement the critical elements of safety oversight system in accordance with Annex 14 Vol I and other relevant ICAO specifications

# ICAO provisions related to aerodromes



## Airport Planning Manual ICAO Doc 9184

- **Part 1 Master Planning**
- **Part 2 Land Use and Environmental Control**
- **Part 3 Guidelines for Consultant- /Construction Services**

# ICAO provisions related to aerodromes



## Aerodrome Design Manual ICAO Doc 9157

- **Part 1**      **Runways**
- **Part 2**      **Taxiways, Aprons and Holding Bays**
- **Part 3**      **Pavements**
- **Part 4**      **Visual Aids**
- **Part 5**      **Electrical Systems**
- **Part 6**      **Frangibility of Aids**

# ICAO provisions related to aerodromes



## Airport Services Manual ICAO Doc 9137

- **Part 1**      **Rescue and Fire Fighting**
- **Part 2**      **Pavement Surface Conditions**
- **Part 3**      **Bird Control and Reduction**
- **Part 5**      **Removal of Disabled Aircraft**
- **Part 6**      **Control of Obstacles**
- **Part 7**      **Airport Emergency Planning**
- **Part 8**      **Airport Operational Services**
- **Part 9**      **Airport Maintenance Services**

# ICAO provisions related to aerodromes

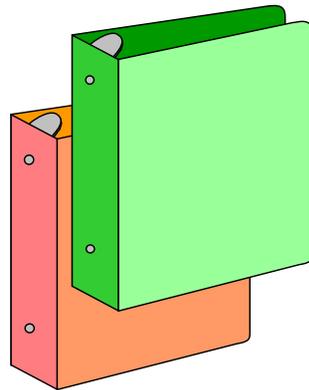


- **STOLPORT Manual – ICAO Doc 9150**
- **HELIPORT Manual – ICAO Doc 9261**
- **Manual on the ICAO Bird Strike Information Systems (IBIS) – ICAO Doc 9332**
- **Manual of Surface Movement Guidance and Control System (SMGCS) – ICAO Doc 9476**

# ICAO DOC 9774 - AN/969



## MANUAL ON CERTIFICATION OF AERODROMES



# ICAO DOC 9774 - AN/969



## Contents

- Introduction
- Aerodrome Certification Regulatory System
- Model Regulations
- Certification Procedure
- Regulatory Authority
- Aerodromes Manual
- Safety Management System
- Sample Forms

# ICAO DOC 9774 - AN/969



## FOREWOOD

- **Purpose** - provide guidance to States (not providers) in establishing their regulatory system for land aerodromes
- **Status** is Guidance
- **Scope** is confined to safety, regularity and efficiency aspects of aerodrome facilities, services, equipment and operational procedures. It *excludes* security, navigation services, finance and administration and pax/cargo services

# ICAO DOC 9774 - AN/969



## FOREWORD (cont'd)

- ***Recognises* resource problems in some States, but indicates that this should not be a reason for not having stringent certification regulations**
- ***Offers* advice and invites comment/revision ideas**

# ICAO DOC 9774 - AN/969



## INTRODUCTION

- **1<sup>st</sup> Edition 2001**
- **A compilation of good accepted practices by a number of States**
- **Feedbacks req'd from States for 2<sup>nd</sup> Edition**
- **Flexible application by States**

# ICAO DOC 9774 - AN/969



## INTRODUCTION (cont'd)

- **Spells out in para 1.1.2 quite clearly the most effective and transparent means of achieving the objectives of Annex 14 SARP**s
- **Transfer of responsibility for safety to aerodrome operators, demonstrated by a robust SMS - para 1.2.3**
- **A robust SMS does not mean that SARP**s need not be met

# ICAO DOC 9774 - AN/969



## CERTIFICATION REGULATORY SYSTEM

- **Basic aviation law, the enabler - para 2..2;**
  - 2.2(d) includes local airspace in the scope of the areas of satisfaction for the CAA to certify and aerodrome
  - 2.2(f) spells out that the basic law should provide for enforcement and sanctions for non-compliance



# ICAO DOC 9774 - AN/969



## CERTIFICATION REGULATORY SYSTEM (cont'd)

- **Basic certification regulation principles**
  - para 2.3(a) is an example where there is quite a lot of flexibility given to a State, even to exclude categories of aerodromes from certification requirements
  - para 2.3(f) the principles should include the provision to use military aerodromes for civil use

# ICAO DOC 9774 - AN/969



## MODEL REGULATIONS

- **General explanation of intent of certification**
- **Submission of application & aerodrome manual**
- **Assessing applicant's capability & adequacy of airport infrastructure**
- **Validity of a certificate**
- **Aerodrome operator's obligations**

# ICAO DOC 9774 - AN/969



## MODEL REGULATIONS (cont'd)

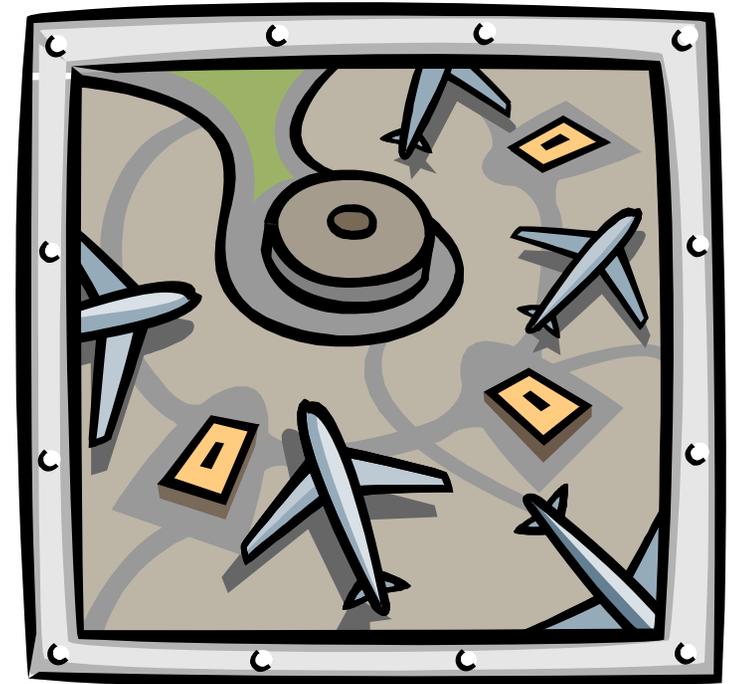
- **Endorsement of conditions of operation**
- **Surrender/transfer/revocation of certificate**
- **Exemptions, if any**

# ICAO DOC 9774 - AN/969



## RESPONSIBILITIES OF THE AERODROME LICENCE HOLDER

“An aerodrome licence holder shall take all reasonable steps to secure that the aerodrome and the airspace within which its visual traffic pattern is normally contained are safe at all times for use by aircraft”



*UK CAA Article 103(6) Air Navigation Order*

# ICAO DOC 9774 - AN/969



## CERTIFICATION PROCEDURE

- **Certification procedure to ensure full compliance with State regulations**
- **The Process - assessment of applicant's capability, the adequacy of the facilities and services by on-site inspection and verification by qualified inspectors, acceptance/approval of the Aerodrome Manual submitted by applicant**

# ICAO DOC 9774 - AN/969



## CERTIFICATION PROCEDURE (cont'd)

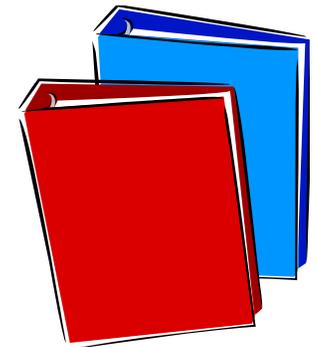
- Issue/transfer/revoke the certificate as appropriate
- Notification of the aerodrome's certified status in the AIP

# ICAO DOC 9774 - AN/969



## AERODROME MANUAL

**“As part of the certification process, States should ensure that an Aerodrome Manual which will include all pertinent info on aerodrome site, facilities, services, equipment, operating procedures, organisation and management including a SMS, is submitted by the applicant for approval/acceptance prior to granting aerodrome certificate”**



# ICAO DOC 9774 - AN/969



## AERODROME MANUAL - CONTENTS

- **General section explaining purpose and scope**
- **Administrative detail of operator**
- **Information on aerodrome facilities**
- **Information on aerodrome services**
- **Aerodrome operating plans, procedures and safety measures**
- **Safety Management Systems**

# ICAO DOC 9774 - AN/969



## SAFETY MANAGEMENT SYSTEMS (SMS)

- **What ?** - A system for managing safety as part of the overall management objective & policy
- **Why?** - To regulate airport operations and improve safety levels, esp. in areas not covered by applicable ICAO/national stds & regulations
- **How?** - Existence of comprehensive technical stds/specs, those for SMS, their implementation and maintenance at all times



ICAO - FLIGHT SAFETY INFORMATION EXCHANGE

- [FSIX Home](#)
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- [COSCAP/RSO](#)
- [GASP](#)
- [FAQ](#)

FSIX Online Library

	Language	Title	Author	Date
1	English	AERODROME DESIGN AND OPERATIONS	COSCAP-South Asia	Jul 1999
2	English	Aerodrome Manual	COSCAP-South Asia	
3	English	AIRWORTHINESS INSPECTOR MANUAL	COSCAP-South Asia	
4	English	Annex 6 requirement for a copy of the AOC	ICAO	Nov 2006
5	English	Annex 6, Part I template for AOC and operations specifications	ICAO	Nov 2008
6	English	Annex 6, Part III template for AOC and operations specifications	ICAO	Nov 2008
7	English	Appendix G to Part 91—Operations in Reduced Vertical Separation Minimum (RVSM) Airspace	FAA	
8	English	Celebrating TAWS 'Saves': But lessons still to be learnt	ICAO	Nov 2006
9	English	Chapter 3 of ICAO Manual of Procedures for Operations Inspection, Certification and Continued Surveillance (Draft-Fifth Edition)	ICAO	
10	English	Final Foreign Air Operator Requirements Implementation Template (PDF)	COSCAP-SEA	Mar 2009
11	English	Final Foreign Air Operator Requirements Implementation Template (Word)	COSCAP-SEA	Mar 2009
12	Arabic	Global Aviation Safety Plan (Arabic)	ICAO	Jul 2007
13	Chinese	Global Aviation Safety Plan (Chinese)	ICAO	Jul 2007
14	English	Global Aviation Safety Plan (English)	ICAO	Jul 2007
15	French	Global Aviation Safety Plan (French)	ICAO	Jul 2007
16	Russian	Global Aviation Safety Plan (Russian)	ICAO	Jul 2007
17	Spanish	Global Aviation Safety Plan (Spanish)	ICAO	Jul 2007
18	English	Global Aviation Safety Roadmap - Part 1	ACI, Airbus, Boeing, CANSO, FSF, IATA, IFALPA	Dec 2006

- [ICAO Publications](#)
- [IFATCA Publications](#)
- [Airbus Safety Library](#)
- [IFALPA Safety Bulletin](#)

# Assembly Papers



## **36<sup>th</sup> Session of ICAO Assembly (2007)**

**<http://www.icao.int/cgi/a36.pl?wp>**

***WP/14 Report on the implementation of aerodrome certification requirements in Annex 14, Vol. 1***

## **37<sup>th</sup> Session of ICAO Assembly (28 Sept – 8 Oct 2010)**

**<http://www.icao.int/cgi/a37.pl?wp;TE>**

# CONCLUSIONS



## Regulator's roles & responsibilities

- ensure conformance with ICAO and national requirements such as aerodrome certification & other safety specifications & procedures
- assess certification applications
- issue certificate
- carry out audits to ensure continuing compliance
- carry out enforcements/sanctions

# CONCLUSIONS



## Operator's roles & responsibilities

- Operate & maintain the aerodrome in accordance with the Aerodrome Manual
- Keep Aerodrome Manual up to date
- Ensure aerodrome facilities comply with safety specifications
- Notify changes to aerodrome
- Ensure business viability

THE END

