



# **Noise Certification Workshop**

## ***Session 1: HISTORIC PERSPECTIVE***

### ***ICAO work on aircraft noise***

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Secretary, ICAO/CAEP

# Background

- ☀ ICAO has been working with environmental issues since 1960s
  - Aircraft noise
  - Aircraft engine emissions
- ☀ Environmental activities are largely carried out through its **C**ommittee on **A**viation **E**nvironmental **P**rotection (**CAEP**), a Technical Committee of the ICAO Council

# ICAO's Work on the Environment

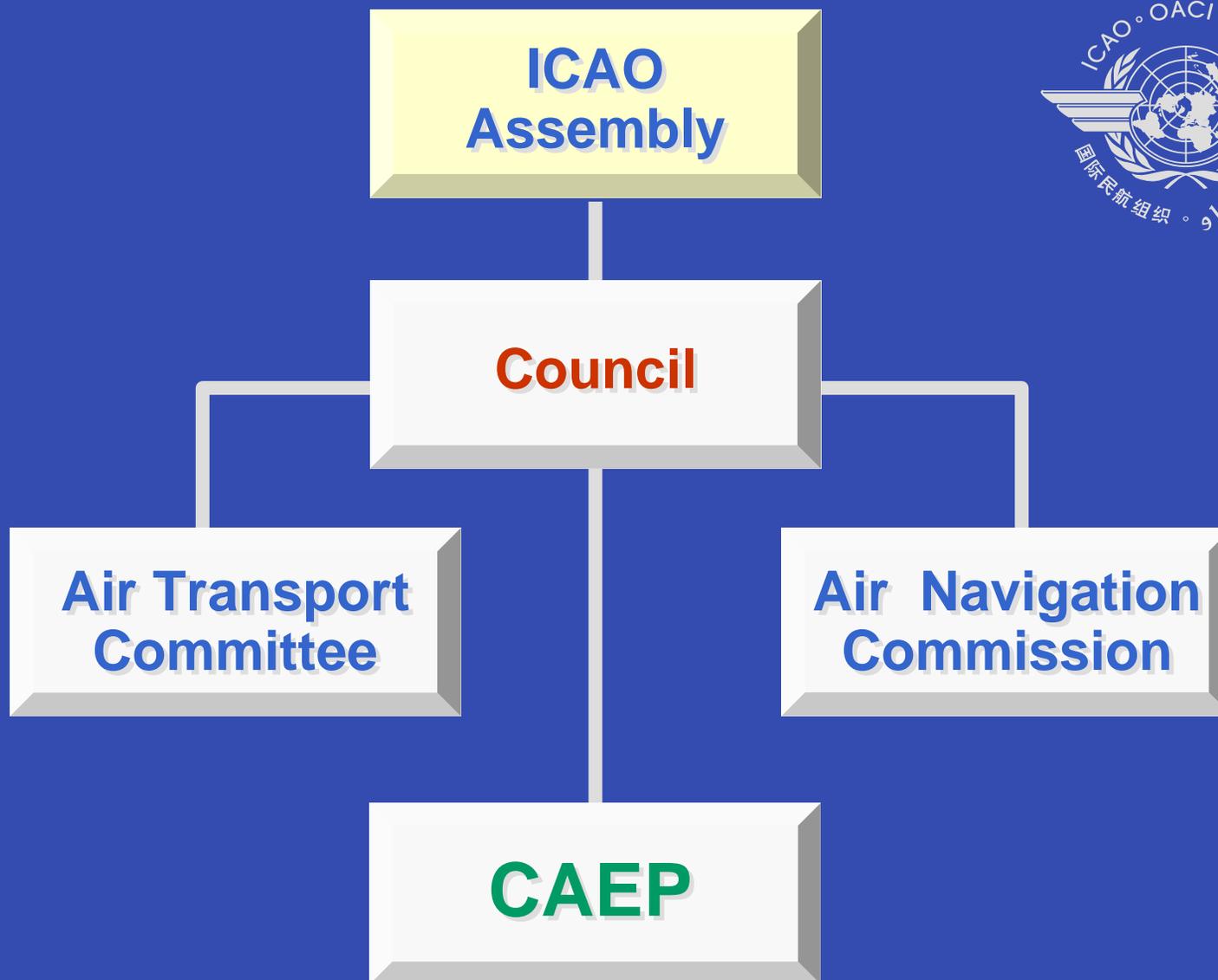
- 1970      ➤ **CAN** – Committee on Aircraft Noise
- 1971      ➤ First SARPs for aircraft noise, designated as Annex 16 to the *Convention on International Civil Aviation* (Chicago, 1944)
- 1977      ➤ **CAEE** – Committee on Aircraft Engine Emissions

# ICAO's Work on the Environment

- 1981      ➤ Annex 16 expanded to encompass SARPs dealing with the control of aircraft engine emissions

- Annex 16:
- Volume I, Aircraft Noise
  - Volume II, Aircraft Engine Emissions

- 1983      ➤ **CAEP** (Committee on Aviation Environmental Protection)
  - ➔ Superseded CAN and CAEE



***Structure for the Consideration  
Of Environmental Proposals***

# CAEP Structure leading up to CAEP/7



**FESG**  
Forecasting and Economic  
Analysis Support Group

**CAEP**  
Up to  
CAEP/7

**WG1**  
Noise  
Technical Issues

**WG2**  
Airports and  
Operations

**WG3**  
Emissions  
Technical Issues

# **WG1 - Noise Technical Issues**

**Future of  
the Scheme**

**Re-Certification**

**Rotorcraft**

**Technology**

**Technical Issues**

**Environmental  
Technical Manual**

**SST**

**Noise Database**

# Who Participates in CAEP?

**Airlines**

**Airports Environmental Ngo's**

**Manufacturers**

**States from Different Regions**

**Pilots**

**Other UN bodies**

## Members (21)

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Argentina

India

South Africa

Australia

Italy

Spain

Brazil

Japan

Sweden

Canada

Netherlands

Switzerland

Egypt

Poland

Tunisia

France

Russian Fed

United Kingdom

Germany

Singapore

United States

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# Observers (12)

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Greece

EC

IFALPA

Norway

IATA

ICSA

ACAC

IBAC

UNFCCC

ACI

ICCAIA

WMO

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# CAEP Terms of Reference

To undertake specific studies, as approved by the Council, related to control of aircraft noise and gaseous emissions from aircraft engines

Taking into account the:

## CAEP Terms of Reference

- a) Effectiveness and reliability of certification schemes from viewpoint of technical feasibility, economic reasonableness and environmental benefit to be achieved

## CAEP Terms of Reference

- b) Developments in other associated fields, e.g. Land-use planning, noise abatement operating procedures, emission control through operational practices, etc.

## CAEP Terms of Reference

- c) International and national programmes of research into control of aircraft noise and control of gaseous emissions from aircraft engines; and

## CAEP Terms of Reference

- d) The potential interdependence of measures taken to control noise and to control engine emissions



ICAO's policies on  
Environmental Protection are  
revised by each ICAO  
Assembly and are published  
as ICAO Assembly  
Resolutions

Doc 9790



**Assembly Resolutions  
in Force**  
(as of 5 October 2001)

Published by authority of the Secretary General

International Civil Aviation Organization

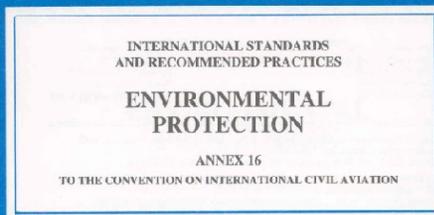
**ICAO POLICIES**  
**A35-5: Consolidated  
statement of  
continuing ICAO  
policies and practices  
related to  
environmental  
protection**

# Noise – Balanced Approach

- ☀ Concept started in CAEP/2
- ☀ Developed by CAEP/ 5 – response to Council request
- ☀ Comprises four elements:
  - Noise at source
  - Land-use planning management
  - Operational measures
  - Operating restrictions

# Noise at Source

## Annex 16, Vol I



VOLUME I  
AIRCRAFT NOISE

THIRD EDITION — JULY 1993



This volume comprises all amendments to Annex 16 adopted by the Council since 22 March 1973 and subsequent to 27 November 1993, all previous editions of the Annex.

For information regarding the responsibilities of the member and participating States, see Paragraphs 1 and 2 of the Annex.

INTERNATIONAL CIVIL AVIATION ORGANIZATION

**Current SARPs for jet aircraft are included in Annex 16 as:**

# Noise at Source

## CHAPTER 2. SUBSONIC JET AEROPLANES — APPLICATION FOR CERTIFICATE OF AIRWORTHINESS FOR THE PROTOTYPE ACCEPTED BEFORE 6 OCTOBER 1977

### Chapter 2 (before Oct 1977, eg B727, early B737 and DC9)

2.1.1 The Standards of this chapter shall be applicable to all subsonic jet aeroplanes for which a certificate of airworthiness, or an equivalent prescribed procedure was carried out by the certifying authority before 6 October 1977, except those aeroplanes:

- a) requiring a runway length\* of 610 m or less at maximum certificated mass for airworthiness; or
- b) powered by engines with a by-pass ratio of 2 or more and for which a certificate of airworthiness for the individual aeroplane was first issued before 1 March 1972; or

- c) approach noise measurement point: the point on the ground, on the extended centre line of the runway, 120 m (395 ft) vertically below the 3° descent path originating from a point 300 m beyond the threshold. On level ground this corresponds to a position 2 000 m from the threshold.

#### 2.4 Maximum noise levels

# Noise at Source

- CHAPTER 3.**
- 1.— SUBSONIC JET AEROPLANES —  
Application for Certificate of Airworthiness  
for the Prototype accepted on or after  
6 October 1977 and before 1 January 2006**
  - 2.— PROPELLER-DRIVEN AEROPLANES OVER 5 700 kg —  
Application for Certificate of Airworthiness  
for the Prototype accepted on or after  
1 January 1985 and before 17 November 1988**
  - 3.— PROPELLER-DRIVEN AEROPLANES OVER 8 618 kg —  
Application for Certificate of Airworthiness  
for the Prototype accepted on or after  
17 November 1988 and before 1 January 2006**

## Chapter 3 (Oct 1977)

*Note 1.— See also Chapter 1, 1.7.*

which either the application for certification of airworthiness for the prototype was accepted or another equivalent prescribed procedure was carried out by the certifying authority, on or after

# Noise at Source

**CHAPTER 4. 1.— SUBSONIC JET AEROPLANES —  
Application for Certificate of Airworthiness  
for the Prototype accepted on or after 1 January 2006**

**2.— PROPELLER-DRIVEN AEROPLANES OVER 8 618 kg —  
Application for Certificate of Airworthiness for the  
Prototype accepted on or after 1 January 2006**

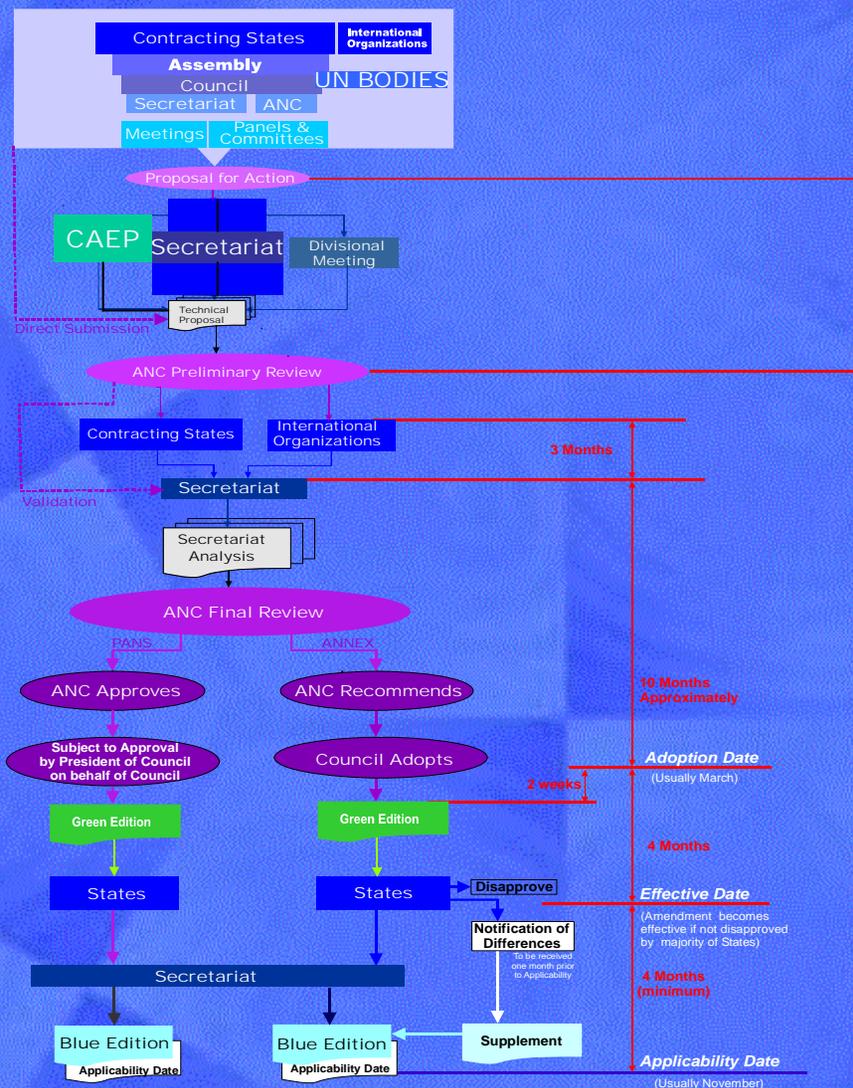
## Chapter 4 (Jan 2006 /

## re-certification of Chap 3)

“Chapter 4” = Chap. 3 less a 10 EPNdB  
cumulative margin

## Re-Certification Procedures

# Making an ICAO Standard



Origin of Proposal

Development Phase

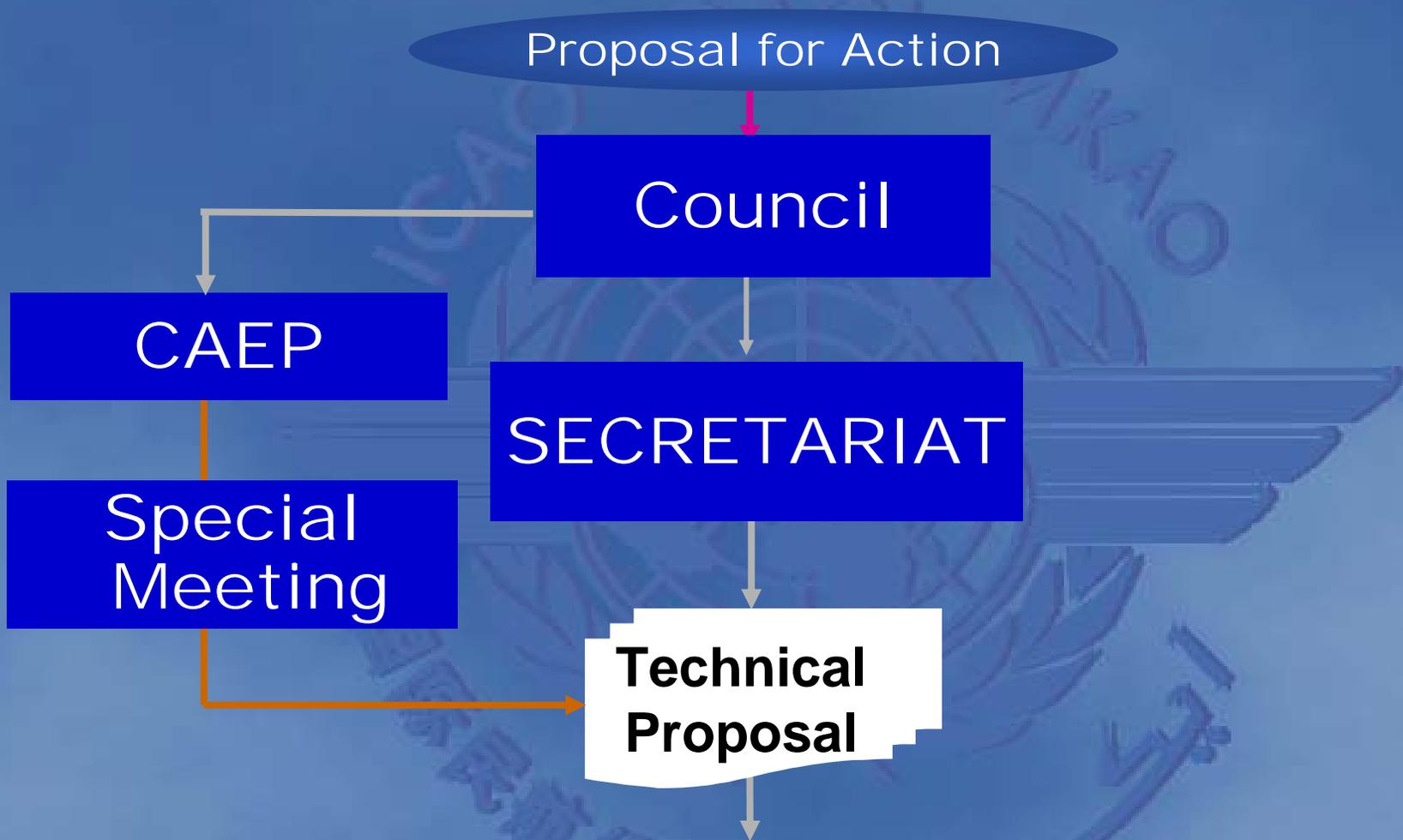
Review Phase

Adoption/  
Publication Phase

# Origin of Proposal

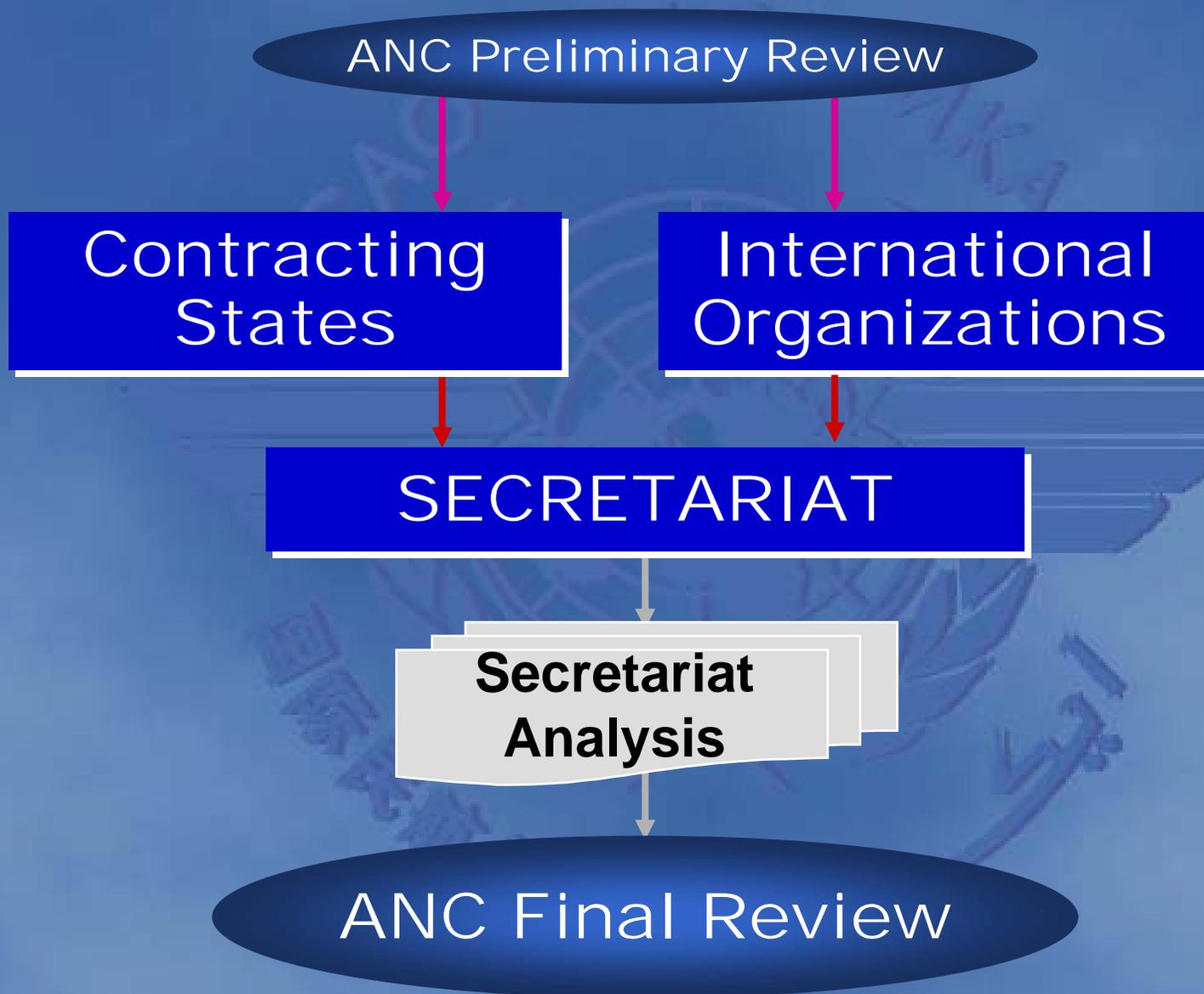


# Development Phase

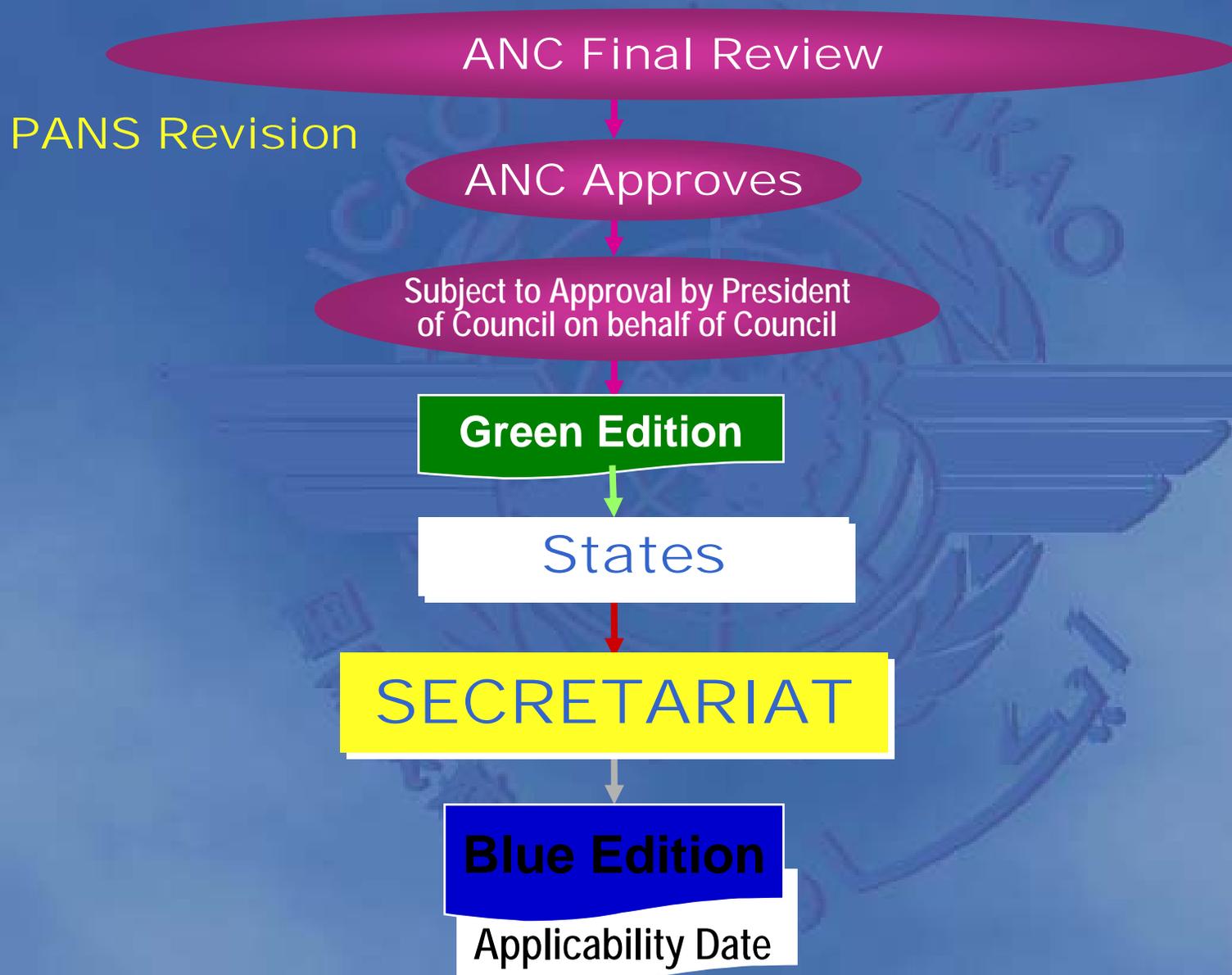


Council usually refers to ANC for Preliminary Review

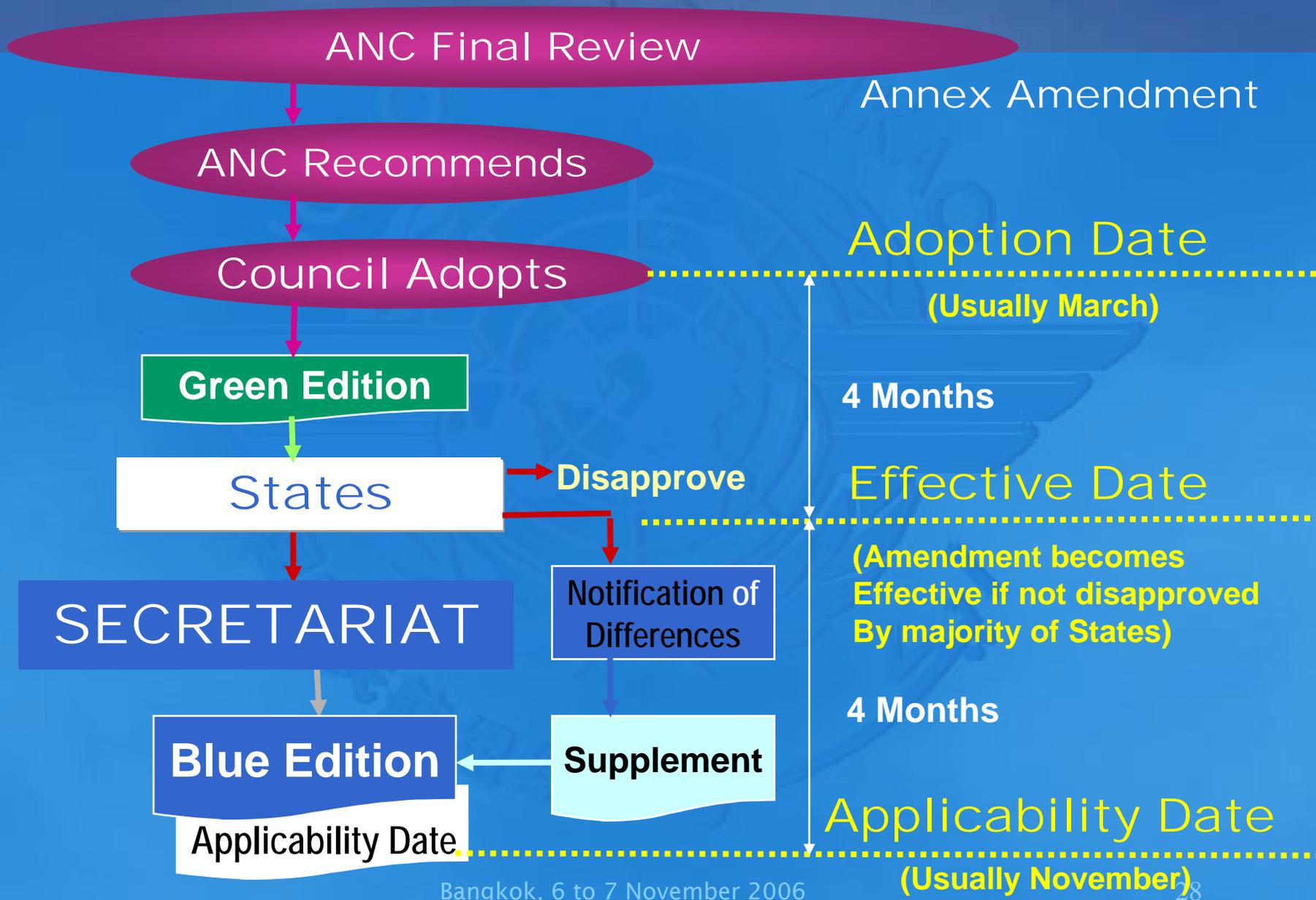
# Review Phase



# Adoption/Publication Phase



# Adoption/Publication Phase

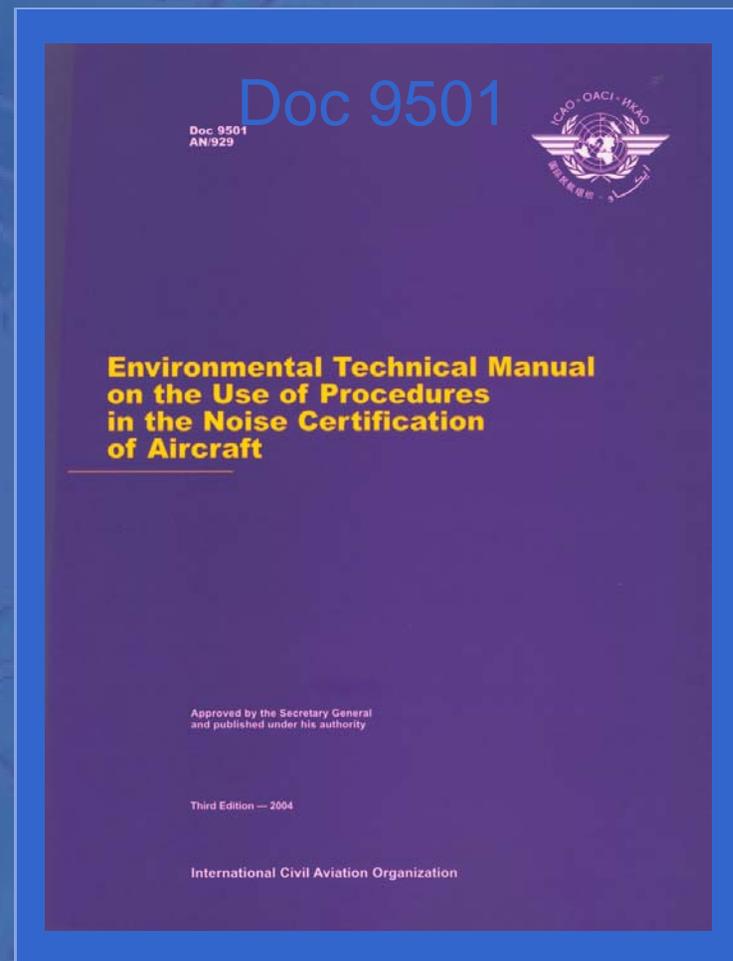
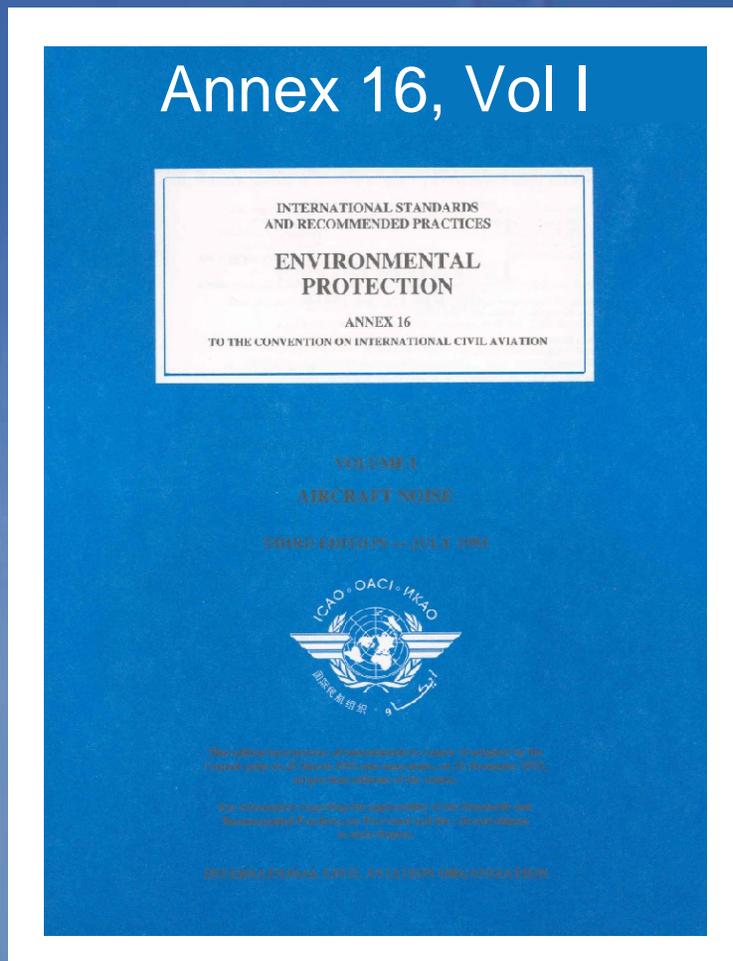


- ☀ On 26 May 2004, the Council considered amendments to Annex 16 — Environmental Protection, Volume I — Aircraft Noise, Annex 6 — Operation of Aircraft, Part III and Annex 14 — Aerodromes, Volume I which arose from the recommendations of CAEP/6.

- ☀ The most significant aspects of the amendments were:
  - new provisions relating to documents attesting noise certification,
  - provisions for re-certification, and
  - references to the balanced approach to noise management.

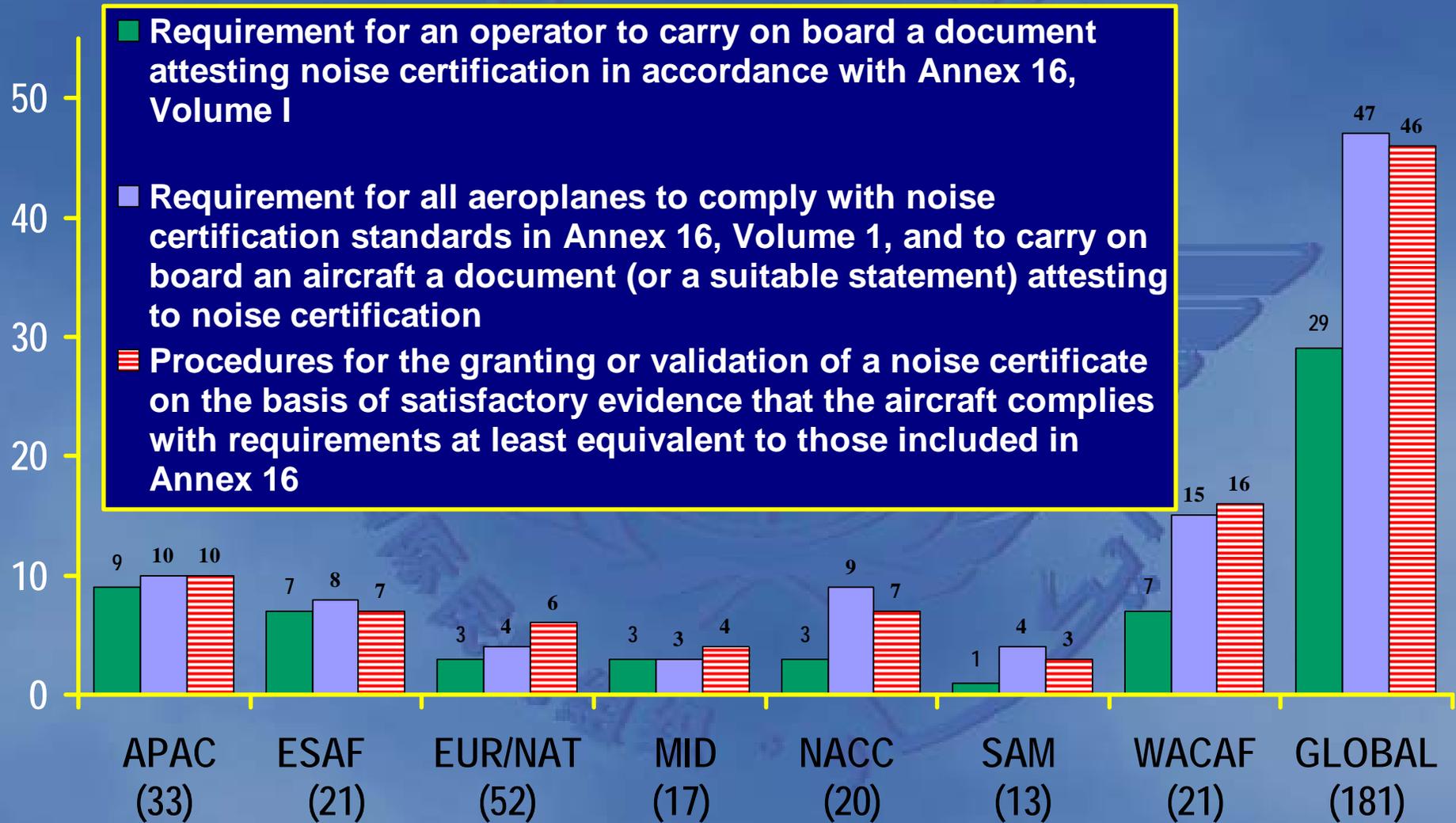
- ✿ Proposals sent to States and international organizations for comments and considered in light of these comments for adoption mid 2005.
- ✿ Adopted on 23 February 2005 for applicability on 24 November 2005.
- ✿ The Council also agreed with a new work programme for CAEP leading to CAEP/7.

# Noise Certification



# Noise Certification Requirements Annex 16 - All Regions

Number of non-compliances by Region



# SAFETY OVERSIGHT AUDITS

- ☀ 1<sup>st</sup> cycle: 1999 to 2004
- ☀ 181 States and 5 territories audited
- ☀ Shortcut in October 2004
- ☀ By December 2005 situation improved e.g.

Protocol	APAC	Global
4.184	8	28
5.065	8	44
5.066	8	44

- ☀ 2<sup>nd</sup> cycle: started March 2005
- ☀ 6 years

