ICAO Doc 9760
(Airworthiness Manual)
3rd Edition-2014

Alain Coutu
Airworthiness / OPS
Air Navigation Bureau
ICAO-HQ

Mashhor Alblowi
Regional Officer, Flight Safety
ICAO MID Regional Office
Introductions and administrative arrangements

- Introductions
- Working arrangements
  - Building & facilities
  - Cell phones
  - Questions
  - Parking Lot
  - Programme
  - Feed Back Form
### Seminar Schedule

#### DAY 1: Tuesday, 27 May 2014

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.00-9.30</td>
<td>Presentation/Seminar arrangements</td>
</tr>
<tr>
<td>9.30-10.30</td>
<td>Introduction</td>
</tr>
<tr>
<td>10.30-10.45</td>
<td>Coffee Break</td>
</tr>
<tr>
<td>10.45-12.00</td>
<td>Doc 9760 Part I – Definitions and Abbreviations</td>
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<tr>
<td>12.00-13.00</td>
<td>Lunch Break</td>
</tr>
<tr>
<td>13.00-14.30</td>
<td>Doc 9760 Part II – Airworthiness Organizational Structure and State responsibilities</td>
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<tr>
<td>14.30-14.45</td>
<td>Coffee Break</td>
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<tr>
<td>14.45-16.00</td>
<td>Doc 9760 Part III – State of Registry</td>
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#### DAY 2: Wednesday, 28 May 2014

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<tr>
<td>9.00-10.30</td>
<td>Doc 9760 Part III – State of Registry</td>
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<tr>
<td>10.30-10.45</td>
<td>Coffee Break</td>
</tr>
<tr>
<td>10.45-12.00</td>
<td>Doc 9760 Part IV – State of the Operator</td>
</tr>
<tr>
<td>12.00-13.00</td>
<td>Lunch Break</td>
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<tr>
<td>13.00-14.30</td>
<td>Doc 9760 Part IV – State of the Operator</td>
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<tr>
<td>14.30-14.45</td>
<td>Coffee Break</td>
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<tr>
<td>14.45-16.00</td>
<td>Doc 9760 Part IV – State of the Operator</td>
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#### DAY 3: Thursday, 29 May 2014

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<th>Time</th>
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<tr>
<td>9.00-10.30</td>
<td>Doc 9760 Part V – State of Design and Manufacture</td>
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<tr>
<td>10.30-10.45</td>
<td>Coffee Break</td>
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<tr>
<td>10.45-12.00</td>
<td>Quiz</td>
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<tr>
<td>12.00-13.00</td>
<td>Lunch Break</td>
</tr>
<tr>
<td>13.00-14.30</td>
<td>Discussion/Conclusion</td>
</tr>
<tr>
<td>14.30-15.00</td>
<td>Closing</td>
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</table>
Introductions and administrative arrangements

Programme

Airworthiness seminar

Opening, introduction and administrative announcements
Module 1 – Overview
Module 2 – Part I of Doc 9760
Module 3 – Part II of Doc 9760
Module 4 – Part III of Doc 9760
Module 5 – Part IV of Doc 9760
Module 6 – Part V of Doc 9760
Quiz and closing
Introductions and administrative arrangements

Questions?
Module 1 - Overview

This module....

- Objectives of the seminars
- ICAO Structure
- Discussion – airworthiness vs continuing airworthiness
- Purpose of Doc 9760
- Background of changes to Doc 9760
- Contents of Doc 9760
Module 1 - Overview

• Purpose of the seminar

✓ To familiarize users with the 3rd edition of Doc 9760 (Airworthiness Manual)
✓ Provide an introduction to the contents of the Manual
✓ Support States in their development of regulations, processes and procedures.
✓ Seek comments to improve the contents of the Manual
Module 1 – Overview
ICAO Structure

Assembly
(191 Contracting States)

Council
(36 Members)

Air Transport Committee
Air Navigation Commission
(19 Members)

Committee on Joint Support of Air Navigation Services

Finance Committee

Secretariat

Panels
Meetings
International Civil Aviation Organization

ICAO Member States (191)

ICAO Assembly

ICAO Council

Air Navigation Commission
Module 1 – Overview
Secretariat Structure

- Secretary General
- Legal Affairs and External Affairs Bureau (LEB)
- Air Transport Bureau (ATB)
- Air Navigation Bureau (ANB)
- Technical Co-operation Bureau (TCB)
- Bureau of Administration and Services (ADB)

- Safety Standardization and Infrastructure
  - Flight Operations
  - Air Transport Management
  - Aerodromes
  - Integrated Infrastructure Management
  - Accident Investigation
  - Meteorology
  - Aviation Medicine
  - Dangerous Goods

- Safety Management and Monitoring
  - Aviation Safety Training
  - Continuous Monitoring and Oversight
  - Integrated Safety Management
  - Implementation Support and Development

Locations:
- Bangkok
- Cairo
- Dakar
- Lima
- Mexico
- Nairobi
- Paris
Module 1 - Overview
Flight Operations structure

Mr Mitchell Fox
Chief, Flight Operations Section

Miguel Marin
Technical Officer Operations

Henry Defalque
Technical Officer Operations / PEL

Alain Coutu
Technical Officer Airworthiness

Nicole Barrette - Sabourin
Training Officer Training

Michelle Millar
Technical Officer Operations / Human Factors

Martin Maurino
Safety, Efficiency and Operations Officer

Annex 1 – Personnel Licensing
Annex 6 – Operation of Aircraft
Annex 7 – Aircraft Nationality and Registration Marks
Annex 8 – Airworthiness of Aircraft
Module 1 – Overview
ICAO Documentation structure

Convention and Articles

Annexes (19)
(Standards and Recommended Practices, SARPS)

Guidance

Circulars

Procedures for Air Navigation Services (PANS)

Appendices

Attachments
Module 1 - Overview
Making of a ICAO Standard

Proposal → Development → Review → Adoption and publication
Development Phase

Proposal for Action

ANC Panel

ANC

Secretariat

AN Study Group

Divisional Meeting

Technical Proposal

ANC Preliminary Review

Audio-visual Aids Unit © ICAO, 2004
Review Phase

ANC Preliminary Review

Contracting States

Secretariat

International Organizations

Secretariat Analysis

ANC Final Review
Module 1 – Overview
Objectives of the seminar

At the end of this seminar the participant would be able to identify, with reference to the ICAO Doc 9760:

- the structure of an Airworthiness Organization and its airworthiness responsibilities

- the roles and responsibilities of the State of Registry, State of the Operator and State of Design and Manufacture.
Module 1 – Overview Discussion

- What is Airworthiness / Airworthy?
Module 1 – Overview

Discussion

Airworthiness is the measure of an aircraft’s suitability for safe flight.

Wikipedia

Airworthy - The status of an aircraft, engine, propeller or part when it conforms to its approved design and is a condition for safe operation.

Annex 8

To be airworthy:

1. The aircraft must conform to its Type Certificate (TC).
2. The aircraft must be in a condition for safe operation.

CASA

Annex 8

Just follow the manuals...

Joe Mechanic
Annex 8, Definitions

**Appropriate airworthiness requirements**

The comprehensive and detailed airworthiness codes established, adopted or accepted by a Contracting State for the class of aircraft, engine or propeller under consideration.

Annex 8, Chapter 3.2.1

A Certificate of Airworthiness shall be issued by a Contracting State on the basis of satisfactory evidence that the aircraft complies with the design aspects of the appropriate airworthiness requirements.
Module 1 – Overview
Discussion
Module 1 – Overview
Discussion
Module 1 – Overview
Discussion

• What is continuing airworthiness?
Module 1 – Overview
Discussion

Annex 8, Definitions

Continuing airworthiness

The set of processes by which an aircraft, engine, propeller or part complies with the applicable airworthiness requirements and remains in a condition for safe operation throughout its operating life
Module 1 – Overview
Incidents reported by States
(from ECCAIRS 2005 to 2010)

<table>
<thead>
<tr>
<th>Occurrence Category</th>
<th>No of Occurrences (Primary Event)</th>
<th>by Occurrence Category</th>
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<tr>
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<tr>
<td>CONTROLLED FLT INTO OR TOWARD TERRAIN (CTOL)</td>
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<td>ICING (ICE)</td>
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<td>EXT LOAD RELATED OCCURRANCES (EXTL)</td>
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<td>LOSS OF LIFTING CONDITIONS EN-ROUTE (LOLU)</td>
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<td>GLIDER TOWING RELATED EVENTS (GTOW)</td>
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<td>EVACUATION (EVAC)</td>
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<td>SECURITY RELATED (SEC)</td>
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<td>RWY INCRSN/ON – ANIMAL (RI-A)</td>
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<td>FIRE/SMOKE POST-IMPACT (F-POST)</td>
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<td>ABRUPT MANOEUVRE (AMAN)</td>
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<td>ICING (ICE)</td>
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<td>WINDSHEAR OR THUNDERSTORM (WSTRW)</td>
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<td>CABIN SAFETY EVENTS (CABIN)</td>
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<tr>
<td>UNDERSHOOT/OVERSHOOT (USOS)</td>
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<td>ADMR</td>
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<td>LOSS OF CONTROL - GROUND (LOC-G)</td>
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<td>LOW ALTITUDE OPERATIONS (LALT)</td>
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<td>FUEL RELATED (FUEL)</td>
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<td>TURBULENCE ENCOUNTER (TURB)</td>
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<td>GROUND HANDLING (RAMP)</td>
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<td>CFIT (CFIT)</td>
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<td>FIRE/SMOKE NON-/IMPACT (F-NI)</td>
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<td>GROUND COLLISION (GCOL)</td>
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<td>LOSS OF CONTROL – INFLIGHT (LOC-I)</td>
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<td>ATM/CNS (ATM)</td>
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<td>ABNORMAL RUNWAY CONTACT (ARC)</td>
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<td>RUNWAY INCURSION (RI)</td>
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Component failure (total) = 1105 of 5093 incidents; which is 22% of total incidents

System / Component failure or malfunction (powerplant) = 477 of 5093 incidents
System / Component failure or malfunction (non-powerplant) = 628 of 5093 incidents
Module 1 – Overview
Global accident rate

Global Accident Rate
Accidents per million departures

- 2006: 4.1
- 2007: 4.2
- 2008: 4.8
- 2009: 4.1
- 2010: 4.2
- 2011: 4.2
- 2012: 3.2
Module 1 – Overview
Global audit results

Global Audit Results
Effective Implementation of Safety Oversight Systems by Area

- Legislation: 70%
- Organization: 63%
- Licensing: 71%
- Operations: 66%
- **Airworthiness**: 72%
- Accident Investigation: 51%
- Air Navigation Services: 53%
- Aerodromes: 58%
Quiz

Do you know?

1. How many Parts are there in 3rd edition of Doc 9760?

2. Where can you find guidance on the structure for an Airworthiness Organization?

3. Whose responsibility is it to issue a Certificate of Airworthiness?

4. A Maintenance Organisation approval is granted by whom?

5. How many phases are in the process for the issuance of an Air Operator Certificate?

6. Who grants the approval for Extended Diversion Time Operations?
Quiz

Do you know?

7. What are the State of Registry’s responsibilities for continuing airworthiness?

8. Which State approves Major repairs and modifications?

9. What are the State of Design’s responsibilities for continuing airworthiness?

10. Whose responsibility is it to issue the Mandatory Continuing Airworthiness Instruction?

11. Whose responsibility is it to approve the Maintenance Programme?

12. Who approves the Reliability Programme?
Do you know?

13. Can an aircraft be registered in more than one State?

14. Can one airplane have a different States of Registry than the State of the Operator?
Module 1 – Overview
Purpose of Doc 9760

- Outlines the duties and responsibilities of States to meet the provisions of Annex 8 and Annex 6 with regards to the airworthiness and continuing airworthiness of aircraft.
- Provides guidance and support for States to meet their airworthiness safety oversight functions as described in Doc 9734 Part A (Safety Oversight Manual).
Module 1 – Overview
Purpose of Doc 9760

Annex 8 (Foreword)

Use of the guidance material in the Airworthiness Manual (Doc 9760).

Contracting States are invited to note that the material in the Airworthiness Manual is intended to guide them in the development of their detailed and comprehensive national codes with a view to introducing uniformity in those national codes. The material has no mandatory status and Contracting States are quite free to differ from it either in detail or in methods.
Module 1 – Overview
Purpose of Doc 9760

ICAO has identified the following critical elements (CE) of a State’s safety oversight system:

- **CE 1**: Primary Legislation
- **CE 2**: Specific Operating Regulations
- **CE 3**: State Civil Aviation System and Safety Oversight Functions
- **CE 4**: Technical Personnel Qualification and Training
- **CE 5**: Technical guidance, tools and the provision of safety-critical information
- **CE 6**: Licensing, certification, authorization and approval obligations
- **CE 7**: Surveillance obligations
- **CE 8**: Resolution of safety concerns

(Doc 9734 Part A - Safety Oversight Manual)
Module 1 – Overview
Purpose of Doc 9760

CE-2. Specific operating regulations:

The provision of adequate regulations to address, at a minimum, national requirements emanating from the primary aviation legislation and providing for standardized operational procedures, equipment and infrastructures (including safety management and training systems), in conformance with the Standards and Recommended Practices (SARPs) contained in the Annexes to the Convention on International Civil Aviation.

Note.— The term “regulations” is used in a generic sense to include but is not limited to instructions, rules, edicts, directives, sets of laws, requirements, policies, and orders.

(Doc 9734 Part A- Safety Oversight Manual)
Module 1 – Overview
Purpose of Doc 9760

**CE 5. Technical guidance, tools and the provision of safety-critical information:**

- States should provide technical guidance (including processes and procedures), tools (including facilities and equipment) and safety-critical information, as applicable, to its technical personnel to enable them to perform their safety oversight functions.

- In addition, this includes the provision of technical guidance to the aviation industry on the implementation of applicable regulations and instructions.

*(Doc 9734 Part A- Safety Oversight Manual)*
Module 1 – Overview
Purpose of Doc 9760

CE-6. Licensing, certification, authorization and/or approval obligations:
The implementation of processes and procedures to ensure that personnel and organizations performing an aviation activity meet the established requirements before they are allowed to exercise the privileges of a licence, certificate, authorization and/or approval to conduct the relevant aviation activity.

(Doc 9734 Part A- Safety Oversight Manual)
Module 1 – Overview

Background - References

✓ Doc 9760  Advance 2nd edition
✓ Annex 1   (Personnel Licensing)
✓ Annex 6   (Operations of Aircraft)
✓ Annex 7   (Aircraft Nationality and Registration Marks)
✓ Annex 8   (Airworthiness of Aircraft)
✓ Annex 16  (Environmental Protection)
✓ Annex 19  (Safety Management)
✓ Doc 9734  (Safety Oversight Manual)
✓ Doc 9735  (USOAP Audit Programme Continuous Monitoring)
✓ Doc 8335  (Manual of Procedures for Operations Inspection, Certification and Continued Surveillance)
✓ Doc 9626  (Manual on the Regulation of International Air Transport)
✓ Doc 9859  (Safety Management Manual)
Module 1 – Overview

Background

- 1st Edition was published in 2001, replacing:
  - Doc 9642 (Continuing Airworthiness Manual)
  - Doc 9051 (Airworthiness Technical Manual)
  - Doc 9389 (Manual of Procedures for an Airworthiness Organization)
  - Published in 2 Volumes

- Advance 2nd Edition (unedited) included:
  - Consequential changes as a result to amendments to Annex 8
  - A new chapter on Production
  - Combined both Volumes into one Manual
  - The Doc 9760, Advance 2nd Edition (unedited) was placed on ICAO-Net in 2008
  - Not published nor available in ICAO publication catalog
Module 1 – Overview

Background

3rd Edition

- Completely re-structured
- Re-organized and presented by responsibilities i.e. State of Registry, State of the Operator and State of Manufacture and Design.
- Several Chapters were revised
- Information is largely from previous editions of Doc 9760, with changes carried out by the ICAO Airworthiness Panel (AIRP) and updated by the Secretariat.
- Due to the extent of the revision, changes could not be tracked. It also required the creation of a third edition.

- Doc 9760, 3rd edition, is available on ICAO-NET
Module 1 – Overview
Contents of Doc 9760 (3rd Edition)

Presented in 5 Parts:

- Part I  (Definitions and Abbreviations)
- Part II  (Airworthiness Organization Structure and Responsibilities of State)
- Part III  (State of Registry)
- Part IV  (State of the Operator)
- Part V  (State of Design and Manufacture)

- Additional guidance on the contents of forms and the processing of applications
Module 1 – Overview
Contents of Doc 9760 (3rd Edition)

Part III – State of Registry

Part IV – State of Operator

Part V – State of Design and Manufacture
Module 1 – Overview
Roles and Responsibilities

State of Registry

- Certificate of Registration (C of R)
- Certificate of Airworthiness (C of A)
- Noise certificate
- Export C of A
- Special flight permit
- Major repairs and modifications approval
- Maintenance programme approval
- Approval of maintenance organization
- Continuing airworthiness of aircraft
Module 1 – Overview
Roles and Responsibilities

State of the Operator

- Air Operator Certificate (Airworthiness Aspects)
- Operations Specifications
- MEL
- Continuing airworthiness of aircraft
Module 1 – Overview
Roles and Responsibilities

State of Design and Manufacture

- Type certification
- Production approval / certification
- Continuing airworthiness of aircraft
Module 1 – Overview

Summary

✓ Objectives of the seminars
✓ Discussed – airworthiness vs continuing airworthiness
✓ Purpose of Doc 9760
✓ Background on changes to Doc 9760
✓ Contents of Doc 9760
Module 1 – Overview

Questions?
Module 2 - Part I of Doc 9760
Contents of Part I

Part I. Definitions and abbreviations

• Specific definitions of the Annexes are re-produced. Additional definitions used are specific to Doc 9760.
• New section “Abbreviations” is included
Module 2 - Part I of Doc 9760

This module....

• Commonly used definitions
• New definitions
• List of abbreviations
Module 2 - Part I of Doc 9760
Definitions

Let's review a few of these.....

**Aeroplane**  A power-driven heavier-than-air aircraft, deriving its lift in flight chiefly from aerodynamic reactions on surfaces which remain fixed under given conditions of flight.

**Aircraft**  Any machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against the earth's surface.
Classification of aircraft

Annex 7, Chapter 2
Module 2 - Part I of Doc 9760
Definitions

Remotely Piloted Aircraft System (RPAS)

Annex 7 Paragraph 2.3

*Unmanned aircraft shall include unmanned free balloons and remotely piloted aircraft.*
Extended diversion time operation (EDTO). Any operation by an aeroplane with two or more turbine engines where the diversion time to an en-route alternate aerodrome is greater than the threshold time established by the State of the Operator.

EDTO – significant system. An aeroplane system whose failure or degradation could adversely affect the safety particular to an EDTO flight, or whose continued functioning is specifically important to the safe flight and landing of an aeroplane during an EDTO diversion.
Module 2 - Part I of Doc 9760
Definitions

*Appropriate airworthiness requirements*  The comprehensive and detailed airworthiness codes established, adopted or accepted by a Contracting State for the class of aircraft, engine or propeller under consideration.
Module 2 - Part I of Doc 9760

Definitions

Instructions for continuing airworthiness. A set of descriptive data, maintenance planning and accomplishment instructions, developed by a design approval holder in accordance with the certification basis for the product. The ICAs provide operators with the necessary information to develop their own maintenance programme and also for approved maintenance organisations to establish the accomplishment instructions.

Life-limited part. Any part of which a mandatory replacement limit (in hours, cycles or calendar time) is specified in the type design, the mandatory continuing airworthiness information or instructions for continuing airworthiness. These parts must be permanently removed from service on or before this limit is reached.
Definitions

**Maintenance programme.** A document which describes the specific scheduled maintenance tasks and their frequency of completion and related procedures, such as a reliability programme, necessary for the safe operation of those aircraft to which it applies.

**Mandatory Continuing Airworthiness Information.** The mandatory requirements for the modification, replacement of parts, or inspection of aircraft and amendment of operating limitations and procedures for the safe operation of the aircraft. Among such information is that issued by Contracting States in the form of airworthiness directives.
Module 2 - Part I of Doc 9760

Abbreviations

When the following abbreviations and acronyms are used in this manual, they have the meanings shown.

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Meaning</th>
</tr>
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<tbody>
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<td>AD</td>
<td>Airworthiness directive</td>
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<tr>
<td>AED</td>
<td>Airworthiness engineering division</td>
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<tr>
<td>AFM</td>
<td>Aircraft flight manual</td>
</tr>
<tr>
<td>AID</td>
<td>Airworthiness inspection division</td>
</tr>
<tr>
<td>ALI</td>
<td>Airworthiness limitation items</td>
</tr>
<tr>
<td>AMO</td>
<td>Approved maintenance organization</td>
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<tr>
<td>AOC</td>
<td>Air operator certificate</td>
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<tr>
<td>APU</td>
<td>Auxiliary power unit</td>
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<tr>
<td>CAA</td>
<td>Civil aviation authority</td>
</tr>
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<td>C of A</td>
<td>Certificate of airworthiness</td>
</tr>
<tr>
<td>C of R</td>
<td>Certificate of registration</td>
</tr>
<tr>
<td>CDL</td>
<td>Configuration deviation list</td>
</tr>
<tr>
<td>CG</td>
<td>Centre of gravity</td>
</tr>
<tr>
<td>CMR</td>
<td>Certification maintenance requirements</td>
</tr>
<tr>
<td>DGCA</td>
<td>Director General of Civil Aviation</td>
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</table>

MCAI – Mandatory continuing airworthiness information
AMO – Approved maintenance organization
MTOM – Maximum take-off mass
Module 2 - Part I of Doc 9760
Summary

✓ Reviewed some definitions
✓ Discussed new definitions
✓ Abbreviations can be found after definitions
Module 2 - Part I of Doc 9760
Definitions and abbreviations

Questions?
Module 3 - Part II of Doc 9760

Part II. Airworthiness organizational structure and State responsibilities

Contents of Part II

Chapter 1: State’s airworthiness responsibilities
Chapter 2: Primary aviation legislation
Chapter 3: State regulatory system
Chapter 4: Airworthiness organization
Module 3 - Part II of Doc 9760

This module....

• Setup of a typical Airworthiness Organization
• Some key responsibilities of an Airworthiness Organization
• Roles of the Airworthiness Engineering Division (AED) and Airworthiness Inspection Division (AID).
• Training requirements and qualifications for technical personnel
• Airworthiness technical library and records
Module 3 - Part II of Doc 9760
Airworthiness Organization Structure and Responsibilities

Key responsibilities include:

• Develop or adopt regulations to meet its obligations to the Convention on Civil Aviation

• Discharging of State responsibilities to:
  ✓ Meet the provisions of Annex 6 and 8 with regards to the airworthiness of aircraft
  ✓ Meet the provisions of Annex 6 and 8 with regards to the continuing airworthiness of aircraft
Module 3 - Part II of Doc 9760
Airworthiness Organization Structure and Responsibilities

- Develop and implement periodic surveillance programmes based on the complexity of its aviation industry:
  - Conduct both periodic and unannounced surveillance of industry activities
  - Evaluate accidents, incidents and service difficulty reports
  - Take any timely enforcement action when necessary
Module 3 - Part II of Doc 9760
Airworthiness Organization Structure and Responsibilities

Airworthiness Engineering Division (AED)

✓ Approve design organizations
✓ Issue / validate / accept type certificates
✓ Support type certification activities
✓ Approve production organizations
✓ Issue production certificates
✓ Approve modifications and repairs
✓ Support the AID when required
✓ Ensure continuing airworthiness of aircraft
Module 3 - Part II of Doc 9760
Airworthiness Organization Structure and Responsibilities

Airworthiness Inspection Division (AID)

- Approve maintenance organizations
- Oversight of the maintenance and airworthiness aspects of air operators
- Registration of aircraft; maintains a Register of aircraft
- Issue or validate and renew Certificate of Airworthiness
- Approve maintenance programme
- Issue special flight approval
- Issue Export C of A, if required
- Support AED, when required
- Licensing tasks, where applicable
Staff and inspector qualifications and experience

AED technical staff

✓ Knowledge and experience with design, manufacture and airworthiness certification
✓ Knowledge and skill to audit design and manufacturing organization
✓ Be able to apply design and manufacture standards relating to airworthiness certification to ensure the prototype or modified aircraft / parts meet airworthiness requirements
✓ Have good writing and interpersonal skills
Module 3 - Part II of Doc 9760
Airworthiness Organization Structure and Responsibilities

Staff and inspector qualifications and experience

AID Inspector

- Knowledge and experience related to aircraft continuing airworthiness management
- Experience in the performance of maintenance, repair and modification of aircraft, engines and aircraft systems or components
- Hold an aircraft maintenance licence
- Have good communication skills
- Have good interpersonal skills
- Knowledge and skill to audit air operator and AMO
Training requirements for CAA technical staff

- Develop a training programme for staff
  ✓ Initial training
  ✓ OJT
  ✓ Recurrent training
  ✓ Technical training

- Ensure implementation of training
Airworthiness technical library and records

- Reference material available for technical personnel
- Correspondence system on airworthiness matters
- Types of records to be kept
- Electronic records
Module 3 - Part II of Doc 9760
Summary

✓ Brief description of the content of Part II
✓ Discussed a typical Airworthiness Organization setup.
✓ Look at some key responsibilities of an Airworthiness Organization.
✓ AED – responsibilities and staff
✓ AID – responsibilities and inspectors
✓ Qualifications / Training
✓ Airworthiness technical library and records
Module 3 - Part II of Doc 9760
Airworthiness Organization Structure and Responsibilities

Questions?
Module 4 - Part III of Doc 9760
State of Registry

Part III. State of Registry

Content of Part III
Chapter 1: State airworthiness legislation system and organizational structure
Chapter 2: Registration of aircraft
Chapter 3: Aircraft noise certification
Chapter 4: Certificate of airworthiness
Chapter 5: Approval for special flights
Chapter 6: Airworthiness approval for export
Chapter 7: Aircraft maintenance
Chapter 8: Aircraft maintenance – modifications and repairs
Chapter 9: Continuing airworthiness of aircraft
Chapter 10: Approval of the maintenance organization
Module 4 - Part III of Doc 9760

State of Registry

This module….

• Key responsibilities of the State of Registry
• Information required in a aircraft register
• Maintenance programme
• Continuing airworthiness responsibilities of the State of Registry
• Issuing a Certificate of Airworthiness
• Approved Maintenance Organization
• Exercises on the process to issue a C of A and the evaluation of facilities as part of the process for approving a maintenance organization
Article 12 of the Convention

Each contracting State undertakes to adopt measures to insure that every aircraft flying over and maneuvering within its territory and that every aircraft carrying its nationality mark, wherever such aircraft may be, shall comply with the rules and regulations relating to the flight and maneuver of aircraft there in force. Each contracting State undertakes to keep its own regulations in these respects uniform, to the greatest extent, with those established from time to time under this Convention.
Module 4 - Part III of Doc 9760
State of Registry roles and responsibilities

State of Registry responsibilities

• Develops and promulgates regulations:
  ✓ Registration of aircraft
  ✓ Airworthiness and continuing airworthiness of aircraft
  ✓ Noise certification
  ✓ Issuance, validation or acceptance of type certificates
Module 4 - Part III of Doc 9760
State of Registry roles and responsibilities

- Issues certificates and permits:
  - Certificate of Registration
  - Certificate of Airworthiness
  - Noise certificate
  - Special flight permit
  - Export Certificate of Airworthiness
Module 4 - Part III of Doc 9760
State of Registry roles and responsibilities

• Approves
  ✓ Modification and repair
  ✓ Maintenance Organizations
  ✓ Maintenance programme

• Ensures the continuing airworthiness of aircraft
• Conducts surveillance
• Take appropriate enforcement action, when required.
### Module 4 - Part III of Doc 9760
Continuing airworthiness responsibilities

#### State of Registry

<table>
<thead>
<tr>
<th>a. Ensure that it informs the State of Design when it first enters on its register an aircraft of a particular type</th>
</tr>
</thead>
<tbody>
<tr>
<td>b. Determine the continuing airworthiness of an aircraft in relation to the appropriate airworthiness requirements</td>
</tr>
</tbody>
</table>
| c. Develop or adopt requirements to ensure the continuing airworthiness of aircraft during its service life including requirements that the aircraft:  
  • Continues to comply with the appropriate airworthiness requirements after a modification, repair or installation of a replacement part.  
  • Is maintained in an airworthy condition and in compliance with maintenance requirements of Annex 6. |
| d. Upon receipt of MCAI from State of Design adopt directly or assess the information received and take appropriate action. |
| e. Ensure the transmission to the State of Design all MCAI issued by the State of Registry in respect of a product or modification originated from that aircraft. |
| f. Ensure there exist a system whereby information on faults, malfunctions, defects and other occurrences that might cause adverse effects on continuing airworthiness is transmitted to the type design organization. If this is a modification, then the organization responsible for the design modification should be informed. |
| g. Each Contracting State should establish, in respect for large aircraft, the type of service information that is to be reported to its airworthiness authority by operators, organizations responsible for type design and maintenance organizations. Procedures for reporting this information should also be established. |
Each Contracting State or common mark registering authority shall maintain a current register showing for each aircraft registered by the State or common mark registering authority, the information recorded in the certificate of registration.

This would include:

- Nationality or common mark and registration mark
- Manufacture and manufacture’s designation of aircraft
- Aircraft serial number
- Name and address of owner
- Date of issue
### Module 4 - Part III of Doc 9760

**Aircraft Register**

<table>
<thead>
<tr>
<th>State or common mark registering authority</th>
<th>Ministry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department or Service</td>
<td></td>
</tr>
</tbody>
</table>

**CERTIFICATE OF REGISTRATION**

1. **Nationality or common mark and registration mark**
2. **Manufacturer and manufacturer’s designation of aircraft**
3. **Aircraft serial no.**

| Name of owner
| Address of owner
| It is hereby certified that the above described aircraft has been duly entered on the certificate of registration in accordance with the Convention on International Civil Aviation dated 7 December 1944 and with the (†)
| (Signature)
| Date of issue

(†) Insert reference to applicable regulations.

* For use by the State of Registry or common mark registering authority.
Module 4 - Part III of Doc 9760

Maintenance programme

Maintenance Programme

An approved maintenance programme is required for each aircraft type. The information in a maintenance programme should contain at least the following:

- Maintenance tasks and the intervals at which these are to be performed
- When applicable, a continuing structural integrity programme
- Procedures for changing and deviating from the above
- When applicable, conditioning monitoring and reliability programme descriptions of aircraft systems, components and engines.

*Maintenance tasks and that have been specified as mandatory in the approval of the type design should be identified as such in the maintenance programme.*
Module 4 - Part III of Doc 9760
Certificate of Airworthiness

Article 31:

Every aircraft engaged in international navigation shall be provided with a valid Certificate of Airworthiness issued or rendered valid by the State in which the aircraft is registered.

Annex 8, Part II, Para 3.2.1:

A Certificate of Airworthiness shall be issued by a Contracting State on the basis of satisfactory evidence that the aircraft complies with the design aspects of the appropriate airworthiness requirements.
Module 4 - Part III of Doc 9760
Certificate of Airworthiness

A Certificate of Airworthiness shall be:

- Issued or
- Validated

States should develop regulations and procedures for:

- The issuance of a C of A
- The validation of a C of A
- The renewal of a C of A and
- The delegation for the issuance or renewal of a C of A
State of Registry has to ensure that the design of the aircraft meets the appropriate airworthiness requirements. This can be done through:

- **Type Certification**
  - Full certification exercise

- **Type Validation**
  - Certification review to the differences that exist between the State of Registry and State of Design

- **Type Acceptance**
  - Recognition and direct acceptance of type certification already done by State of Design
Module 4 - Part III of Doc 9760
Certificate of Airworthiness

Application for the issue of C of A:

• Review application form
  ✓ Duly completed and submitted with all supporting documents

• Identify aircraft configuration
  ✓ To identify which components and changes to the type design have been made
    o For new aircraft, manufacturer should identify any changes
    o For old aircraft, records from previous State that issued the C of A

• Review documentation
  ✓ AFM
  ✓ Maintenance programme
  ✓ Status of maintenance tasks with respect to the maintenance programme
  ✓ Certification of any major repairs or modifications
  ✓ Status of MCAI compliance mandated by the State of Registry
  ✓ Mass and balance report together with equipment list
  ✓ Aircraft and engine or propeller log books and maintenance records
  ✓ Records that demonstrate the origin of parts that were installed new or repaired
  ✓ Export C of A, if applicable
Module 4 - Part III of Doc 9760
Certificate of Airworthiness

Application for the issue of C of A (cont):

- Inspection of aircraft
  - Exterior
    - Damage to aircraft
    - Verify major modifications and repairs
    - Aircraft, engines / propellers identification plates
    - Components serial numbers conformity with aircraft records
  - Interior
    - Conformity of aircraft interior configuration, emergency and safety equipment
    - Markings and placards location and language
    - Additional markings as required by local regulations

Note: All non-conformities observed should be reported to the applicant in writing. The C of A is only issued after all non-conformities are satisfactorily addressed.
Module 4 - Part III of Doc 9760
Certificate of Airworthiness

Issuance of a C of A

✓ The aircraft must be registered in the State.
✓ Application form completed and signed by owner or appropriately delegated person on behalf of the operator.
✓ Particulars of all work done to restore the aircraft to an airworthy condition.
✓ Full particulars of work done should be entered in the appropriate log book and a maintenance release should be completed and the aircraft certified airworthy by an organization or suitably authorized person.
✓ An organization or suitably qualified person should certify the aircraft airworthy.
✓ All MCAI and other applicable requirements are carried out and certified.
✓ Issue C of A when all requirements are met.

Note: The C of A is only issued after all non-conformities are satisfactorily addressed.
Continuing validity of C of A

Types of C of A

✓ C of A with an expiring period of validity

✓ C of A with a non-expiring period of validity
Module 4 - Part III of Doc 9760
Certificate of Airworthiness

Continuing validity of C of A

A C of A becomes invalid(not in force):

✓ The aircraft does not conform with the type design approved by the State of Registry.
✓ The aircraft is not maintained in an airworthy condition
FictionLand's procedure for processing an application for a C of A.

1. Review the procedure
2. Provide your comments
3. Propose areas of improvement
Module 4 - Part III of Doc 9760
Exercise - Example

4.2 Overview of the criteria on which approval of maintenance organizations is based

4.2.1 Issuance of approval

4.2.1.1 It is strongly recommended that approval be granted only to a whole organization, headed by its Chief Executive Officer (CEO), who should be responsible to the CAA for compliance with the terms and conditions of the approval. This approach provides a guarantee to the CAA that responsibility for corrective action for any deficiencies identified by the CASA is vested at the highest level in the organization's management structure, thus ensuring that the necessary executive authority (including finance, where applicable) will be available. This might, for example, if the approval is vested only in the inspection department of an organization.

4.2.1.2 To support the CEO there should be a group of key personnel, nominated who are appropriately qualified and experienced to manage the various aspects of the organization included in the approval.

4.2.2 Systems of inspection and quality management

4.2.2.1 To satisfy the obligation of States under Part I of Annex 6, aircraft cannot to service following scheduled or unscheduled maintenance unless certifications are in place.
Part III – State of Registry
Exercise

FictionLand’s procedure for processing an application for a C of A.

1. Review the procedure
2. Provide your comments
3. Propose areas of improvement
Part III – State of Registry
Approved Maintenance Organization

Aeroplane / Helicopter Maintenance

Annex 6 Part I Chapter 8 and Annex 6 Part III Section II Chapter 6:

“An operator shall not operate an aeroplane / helicopter unless it is maintained and released to service by an organization approved in accordance with 8.7 (AMO), or under an equivalent system, either of which shall be acceptable to the State of Registry”
Part III – State of Registry
Approved Maintenance Organization

Annex 6, Part 1, 8.1.3:

“When the State of Registry accepts an equivalent system, the person signing the maintenance release shall be licensed in accordance with Annex 1”

Annex 1, 4.1:

“An applicant shall, before being issued with any licence or rating…….., meet such requirements with respect of age, knowledge, experience and where appropriate, medical fitness and skill, as are specified for that licence or rating.”

- Para 4.2.1. provides the requirements for age, knowledge, experience and skill
Part III – State of Registry
Approved Maintenance Organization

Application process for a maintenance organization approval (5 phases):

1. Pre-application
2. Formal application
3. Document evaluation
4. Demonstration and inspection
5. Certification
Part III – State of Registry
Approved Maintenance Organization

Pre-application phase

✓ Face to face meeting
✓ Applicant explains its intent and make any clarifications
✓ CAA to provide guidance, approximate time and cost for the certification and standard information package
✓ Agree on the procedures and a timeline for the certification process
✓ Identify focal persons
Part III – State of Registry
Approved Maintenance Organization

Formal application phase

- Submission of application:
  - Application form and supporting attachments
    - schedule of events
    - statement of compliance
  - Documents to be submitted
    - maintenance organization procedures manual (MOPM)
    - safety management system, if separate from MOPM
    - quality assurance system, if separate from MOPM
  - Applicable application fees
Part III – State of Registry
Approved Maintenance Organization

**Formal application phase**

- Acceptability of formal application
  - Ensure the application package is complete

- Formal application meeting
  - First formal meeting between the CAA and key management personnel of the applicant.
  - Followed by a formal written acceptance of application.
Part III – State of Registry
Approved Maintenance Organization

Document evaluation phase

Ensure the documents submitted are complete and meet the regulatory requirements

The maintenance organization’s procedures manual (as required in Annex 8, Part I, Chapter 8.7.2) should include:

✓ Scope of work to be included in the terms of approval
✓ Organization’s procedures and quality or inspection system
✓ Organization’s facilities
✓ Names and duties person or persons responsible to ensuring the organization is in compliance with the requirements for an AMO
✓ Procedures to establish the competence of maintenance personnel
Part III – State of Registry
Approved Maintenance Organization

Document evaluation phase

Maintenance organization’s procedures manual (cont):

✓ Method used for the completion and retention of maintenance records
✓ Procedures for preparing and signing the maintenance release
✓ Personnel authorized to sign the maintenance release
✓ Additional procedures to comply with operator’s maintenance procedures
✓ Procedures for reporting service information
✓ Procedures to receive, assess, amending and distributing all necessary airworthiness data
Part III – State of Registry
Approved Maintenance Organization

Demonstration and inspection phase

To ensure that the applicant is capable to execute the scope of work applied for.

What to look at?
- Facilities
  ✓ Facilities and working environment is appropriate for the scope of work to be performed
  ✓ Technical data, equipment tools and material to perform the work
  ✓ Proper storage facilities for parts, equipment, tools and material
Part III – State of Registry
Approved Maintenance Organization

Demonstration and inspection phase

- Personnel
  - Key person or persons whose responsibilities include ensuring that the maintenance organization complies with the requirements
  - The necessary personnel to plan, perform, supervise, inspect and release work to be performed
  - Training policy and programme to include the relevant initial and recurrent training

- Records
  - Process to retain maintenance records, work orders and task cards etc.

Note: All non-conformities observed should be reported to the applicant in writing for follow-up and corrective action.
Part III – State of Registry
Approved Maintenance Organization

Certification Phase

Inspector should compile a report for the issuance of an maintenance organization approval. The report should include:

- Complete application form
- All completed checklists used during the demonstration / inspection
- Inspection reports with proper closure to findings

Note: Approval is only issued after all non-conformities are satisfactorily addressed.

- Other documentation to substantiate any recommendations made
Part III – State of Registry
Approved Maintenance Organization

Certification phase - Issuance of approval document

- Review report and recommendations

  Note: Approval is only issued after all non-conformities are satisfactorily addressed

- The approval document should have at least:
  - Organization’s name and location
  - Date of issue and period of validity
  - Terms of approval
Part III – State of Registry
Exercise

FictionLand’s procedure for processing the evaluation of facilities as part of the process for approving a maintenance organization

1. Review the procedure
2. Provide your comments
3. Propose areas of improvement
Module 4 - Part III of Doc 9760

Summary

✓ Brief description of the content of Part III
✓ Key responsibilities of the State of Registry
✓ Continuing airworthiness responsibilities of the State of Registry
✓ Information required in a Aircraft register
✓ Maintenance programme
✓ Issuing a Certificate of Airworthiness
✓ Approved Maintenance Organization
✓ Exercises on the process to issue a C of A and the evaluation of facilities as part of the process for approving a maintenance organization
Module 4 - Part III of Doc 9760
State of Registry

Questions?
Part IV. State of the Operator

Content of Part IV

Chapter 1: State airworthiness legislation system and organizational structure
Chapter 2: Air operator certificate – airworthiness aspects
Chapter 3: Aircraft maintenance – modifications and repairs
Chapter 4: Continuing airworthiness of aircraft
Chapter 5: Airworthiness requirements for extended diversion time operations
Chapter 6: Leasing arrangements
Module 5 - Part IV of Doc 9760
State of the Operator

This module…….

• Key responsibilities of the State of the Operator
• Continuing airworthiness responsibilities of the State of the Operator
• AOC certification – airworthiness aspects
• Contents of a Maintenance Control Manual (MCM)
• Extended Time Diversion Operations (EDTO)
• Exercise on the process of approving a Maintenance Control Manual
The issue of an air operator certificate by the State of the Operator shall be dependent upon the operator demonstrating an adequate organization, method of control and supervision of flight operations, training programme as well as ground handling and maintenance arrangements consistent with the nature and extent of the operations specified.
Module 5 - Part IV of Doc 9760
State of the Operator roles and responsibilities

State of the Operator responsibilities

- Development and promulgation of regulations

✓ Operations of aircraft (including foreign aircraft)
✓ Airworthiness and continuing airworthiness of aircraft
✓ Acceptance of air operator’s MCM

- Issues Air Operator Certificate

✓ Includes the operations specifications of the operator

- Approves MEL
- Conducts surveillance
- Takes appropriate enforcement actions, when required
Module 5 - Part IV of Doc 9760
Continuing airworthiness responsibilities

State of the Operator

Each Contracting State should establish, in respect for large aircraft, the type of service information that is to be reported to its airworthiness authority by operators, organizations responsible for type design and maintenance organizations. Procedures for reporting this information should also be established.

The operator of an large aeroplane / helicopter should monitor and assess maintenance and operational experience with respect to continuing airworthiness and provide the information as prescribed by the State of Registry and report through a system specified in Annex 8, Part II, 4.2.3f) and 4.2.4

The operator of an large aeroplane / helicopter should obtain and assess continuing airworthiness information and recommendations available from the organization responsible for the type design and should implement resulting actions considered necessary in accordance with a procedure acceptable to the State of Registry.
Operators shall ensure that, in accordance to procedures acceptable to the State of Registry:

a) each aeroplane / helicopter they operate is maintained in an airworthy condition;
b) The operational and emergency equipment necessary for an intended flight is serviceable; and
c) The certificate of airworthiness of each aircraft they operate remains valid.
An operator shall not operate an aeroplane / helicopter unless it is maintained and released to service by an organization approved in accordance with Annex 6, Part I, Chapter 8.7, or under an equivalent system, either of which shall be acceptable to the State of Registry.
Module 5 - Part IV of Doc 9760
Air Operator Certificate (Airworthiness aspects)

Certification of an operator (airworthiness aspects) is to determine the capability of the applicant to adequately maintain its aircraft in a airworthy condition.

This would include a detailed review and evaluation of the applicant’s:

- ✔ Maintenance control manual
- ✔ Supplemental manual (W/B, EDTO etc)
- ✔ Maintenance programme
- ✔ Maintenance arrangements
- ✔ Staffing
- ✔ Facilities
- ✔ Training
- ✔ MEL (coordination with OPS)
Module 5 - Part IV of Doc 9760
Air Operator Certificate (Airworthiness aspects)

Application process for an AOC (5 phases):

1. Pre-application
2. Formal application
3. Document evaluation
4. Demonstration and inspection
5. Certification

(The 5 phase process drawn from Doc 8335- Manual of procedures for operations inspection, certification and continued surveillance)
Module 5 - Part IV of Doc 9760
Air Operator Certificate (Airworthiness aspects)

Pre-application phase

- Face to face meeting
- Applicant to explain intent and make clarifications
- CAA to provide guidance, approximate time and cost for the certification and an information package
- Agree on the procedures and a timeline for the certification process
- Identify focal persons
Formal application phase

• Submission of application:

✓ Application form and supporting attachments (to include)
  
  o schedule of events
  o statement of compliance
  o management structure and key staff members
  o information of aircraft to be operated
  o maintenance arrangements, if applicable
  o documents of purchase, leases, contracts or letters of intent

✓ Applicable application fees
Module 5 - Part IV of Doc 9760
Air Operator Certificate (Airworthiness aspects)

Formal application phase

• Submission of application (cont):

  ✓ Documentation to be submitted
    o maintenance control manual
    o maintenance programme for each type of aircraft
    o reliability programme, if applicable
    o quality assurance system
    o safety management system
Module 5 - Part IV of Doc 9760
Air Operator Certificate (Airworthiness aspects)

Formal application phase

• Acceptability of formal application
  ✔ Ensure the application package is complete

• Formal application meeting
  ✔ First formal meeting between the CAA and key management personnel of the applicant.
  ✔ Followed by a formal written acceptance.
Module 5 - Part IV of Doc 9760
Air Operator Certificate (Airworthiness aspects)

Document evaluation phase

• Provisions to be approved / accepted
  ✓ maintenance control manual
  ✓ aircraft-specific maintenance programme
  ✓ maintenance arrangements

Note: All non-conformities observed should be reported to the applicant in writing for follow-up and corrective action.
Module 5 - Part IV of Doc 9760
Air Operator Certificate (Airworthiness aspects)

- Provisions that may require evaluation by more than one specialty group:
  - MEL
  - Special operations including PBN, Low visibility operations, Cat II and Cat III operations, EDTO and RVSM
  - SMS
Maintenance Control Manual (MCM)

- Procedures to ensure:
  - Each aircraft is maintained in an airworthy condition
  - Operational and emergency equipment is serviceable
  - C of A remains valid
- A description of the administrative arrangements between the air operator and the AMO
- A description of the maintenance procedures and the procedures for completing and signing a maintenance release when maintenance is based on a system other than that of an AMO
Module 5 - Part IV of Doc 9760
Maintenance control manual (MCM)

MCM (cont.)

- Names and duties of the person or persons to ensure that all maintenance is carried out in accordance with the MCM
- A reference to the maintenance programme for each aircraft type operated
- Methods used for completion and retention of maintenance records
- Procedures for monitoring, assessing and reporting maintenance experience to the State of Registry
- Procedures for the complying of service information reporting
- Procedures to assess continuing airworthiness information and implementing resulting actions
Module 5 - Part IV of Doc 9760
Maintenance control manual (MCM)

MCM (cont.)

• Procedures for implementing MCAI and process for using an alternate means of compliance
• A system of analysis and continued monitoring of the maintenance programme
• A description of aircraft types and models Procedures to ensure that unserviceable systems and components are recorded and rectified
• Procedures for completing and signing a maintenance release for aircraft and parts that have undergone maintenance
MCM (cont.)

- Procedures to ensure the aircraft is maintained in accordance to the maintenance programme
- Training programme for the maintenance personnel employed by the operator
- Operator’s SMS
- Procedure to ensure modifications and repairs comply with State of Registry requirements
- Procedure for MCM revision and control

Note: The Operator to provide a copy of MCM to the State of Registry and State of the Operator, if applicable
Demonstration and inspection phase

To demonstrate that the applicant has the required qualified staff, equipment and facilities to ensure that its aircraft remain in airworthy condition for the duration of its operational life.
Module 5 - Part IV of Doc 9760
Air Operator Certificate (Airworthiness aspects)

Demonstration and inspection phase
What to look at?

✓ MCM
✓ Maintenance programme
✓ Maintenance control organization
✓ Facilities
✓ Aircraft inspection

Note: All non-conformities observed should be reported to the applicant in writing for follow-up and corrective action.
Module 5 - Part IV of Doc 9760
Air Operator Certificate (Airworthiness aspects)

Certification Phase

AID inspector should submit a report to the project manager with the recommendations as to the applicant’s ability to conduct safe operations. The report should include:

- All checklists used during the demonstration / inspection
- Inspection reports with proper closure to findings
- Other documentation to substantiate the any recommendations made

Note: All non-conformities observed should addressed before the issuance of the approval document
Extended Diversion Time Operations (EDTO)

Any operation by an aeroplane with two or more turbine engines where the diversion time to an en-route alternate aerodrome is greater than the threshold time established by the State of the Operator.
Module 5 - Part IV of Doc 9760
Extended Diversion Time Operations (EDTO)

Background:

- Initial State Letter circulated in 2007 (ref SP 59/4-07/47)
- Special Operations Task Force (SOTF) set-up in 2008
- Second State Letter, with revised EDTO provisions circulated in June 2011
- 7 Mar 2012: Amendment 36 to Annex 6 was adopted by Council
- 16 July 2012: Effective date.
- 15 Nov 2012: Applicable date
Module 5 - Part IV of Doc 9760
Extended Diversion Time Operations (EDTO)

EDTO is an evolution of ETOPS

- Based on existing ETOPS provision
- Applies to all commercial aeroplanes
- Addresses systems that could force an aeroplane to divert:
  - Engines (for twins)
  - Loss of pressurization
  - Time limited systems

- Requirements for 2 engines aeroplanes remains mostly unchanged
Module 5 - Part IV of Doc 9760
Extended Diversion Time Operations (EDTO)

• Requirements for **3 or more engines** aeroplanes are based on good “industry practices”
  ✓ No additional maintenance requirements nor additional certification requirements
  ✓ Consideration of Time Limited System / identification of en-route alternates and verification of weather

• Guidance on EDTO also provided in Annex 6 Attachment D
EDTO

Graphic Representation

Diversion range (in time)

60 min

Threshold (eg 75, 90, 180 min)

Max Div Time

Operations beyond 60 MIN

- OPS Ctrl & Flt Dispatch
- OPS Procedures
- Training
- Identify alternates
  - For twin engined a/c:
    - verify alternates above minima

EDTO approval

- EDTO approval
- EDTO significant systems
- EDTO critical fuel
- Verify alternates above minima
  - For twin engined a/c:
    - maintenance program
    - maint. procedures
    - file alternate in ATS FP

Fixed value

State established (specific to aircraft type)

State approved (specific to operator & aircraft type)
EDTO

Graphic Representation Twins

Diversion range (in time)  Threshold (e.g. 60 min)

Operations beyond 60 MIN

EDTO approval

• EDTO approval
• Maintenance program
• EDTO significant systems
• EDTO critical fuel
• OPS Ctrl & Flt Dispatch
• OPS Procedures
• Training
• Identify & verify alternates above minima
• file Alt in ATS flight plan

Fixed value

State established (specific to aircraft type)

Max Div Time

State approved (specific to operator & aircraft type)
EDTO

Graphic Representation Tri’s & Quad’s

Diversion range (in time)

60 min

Threshold (eg 120, 180 min)

Max Div Time

Operations beyond 60 MIN

- OPS Ctrl & Flt Dispatch
- OPS Procedures
- Training
- Identify alternates

EDTO approval

- EDTO approval
- EDTO significant systems
- EDTO critical fuel
- Verify alternates above minima

Fixed value

State established (specific to aircraft type)

State approved (specific to operator & aircraft type)
Operators conducting operations **beyond 60 mins** to an en-route alternate aerodrome will require:

a. All en-route alternate aerodromes be identified

b. The most up-to-date information be provided to the flight crew on identified en-route alternate aerodromes, including operational status and meteorological conditions

c. Conditions at identified en-route alternate aerodromes in (2) above to be at or above the operator’s established aerodrome operating minima for the operation at the estimated time of use (for 2 engines aeroplanes).

d. Also taking into account the operator’s:

- [✓] Operational control and flight dispatch procedures
- [✓] Operational procedures
- [✓] Training programmes
Module 5 - Part IV of Doc 9760
Extended Diversion Time Operations (EDTO)

The EDTO threshold is not an operating limit. It is a flight time to an en-route alternate aerodrome, which is established by the State of the Operator. When establishing an EDTO threshold the State needs to consider that:

a. the airworthiness certification of the aeroplane type does not restrict operations beyond the threshold time;
b. specific flight dispatch requirements are met;
c. necessary in-flight operational procedures are established; and
d. the operator’s previous experience on similar aircraft types and routes is satisfactory.
Module 5 - Part IV of Doc 9760
Extended Diversion Time Operations (EDTO)

An EDTO approval is required for operations beyond the established EDTO threshold.

An EDTO approval should take into consideration:
✓ the aeroplane’s EDTO significant systems (limiting time limitation, if any, and relevant to that particular operation)
✓ the operator’s operational and EDTO experience with the aeroplane type

Note: The operator’s approved maximum diversion time should not exceed the most limiting EDTO significant system time limitation identified in the aeroplane flight manual.
Module 5 - Part IV of Doc 9760
Extended Diversion Time Operations (EDTO)

EDTO significant system

An aeroplane system whose failure or degradation could adversely affect the safety particular to an EDTO flight, or whose continued functioning is specifically important to the safe flight and landing of an aeroplane during an EDTO diversion.

Includes:

- Propulsion systems
- Hydraulic systems
- Flight control systems
- Electrical power
- Equipment cooling systems
- Pressurization systems
- APU
- Cargo compartment fire suppression systems
- Fuel systems
Module 5 - Part IV of Doc 9760

Exercise

Exercise on Fictionland process to approve a MCM

1. Review the procedure
2. Provide your comments
3. Propose areas of improvement
Module 5 - Part IV of Doc 9760
Summary

✓ Brief description of the content of Part IV
✓ Key responsibilities of the State of the Operator
✓ Continuing airworthiness responsibilities of the State of the Operator
✓ AOC certification – airworthiness aspects
✓ Contents of a Maintenance Control Manual
✓ Extended Time Diversion Operations (EDTO)
✓ Exercise on the process of approving a Maintenance Control Manual
Module 5 - Part IV of Doc 9760
State of the Operator

Questions?
Module 5 - Part IV of Doc 9760
State of Design and State of Manufacture

Part V. State of Design and State of Manufacture

Content of Part V

Chapter 1: State airworthiness legislation system and organizational structure
Chapter 2: Type certification
Chapter 3: Aircraft maintenance – modifications and repairs
Chapter 4: Production approvals / certification
Chapter 5: Additional requirements when the State of Manufacture is not the State of Design
Chapter 6: Continuing airworthiness of aircraft
Chapter 7: Issuance of export certificates of airworthiness
This module…..

- Key responsibilities of the State of the Design and State of Manufacture
- Continuing airworthiness responsibilities of the State of the Design and State of Manufacture
- Type certification activities
- Absence of or deficiency by a type certificate holder
State of Design responsibilities

- Ensures the design aspects of the aircraft type comply with the Standards in Annex 8
- Issues type certificate
- Approves AFM, MMEL and CDL
- Approves modifications to the type certificate
- Transmits any ICA and MCAI necessary for the safe operation of the aircraft (including suspension and revocation of TC)
- Addresses the information received from State of Registry on faults, malfunctions, defects and other occurrences
State of Design responsibilities (cont)

- When the State of Design and State of Manufacture is different ensures the organization responsible for the type design cooperates with the manufacturing organization in assessing the information received on the experience with operating the aircraft.

- When the State of Design of an engine or propeller is not the State of Design of the aircraft, it transmits any continuing airworthiness information to the State of Design of the aircraft and any other Contracting State upon request.
Module 5 - Part IV of Doc 9760
State of Manufacturer

State of Manufacture responsibilities

- Ensure that the production of aircraft and aircraft parts, including aircraft parts manufactured by contractors and/or suppliers, are airworthy

- Issue a production approval to the manufacturing organization upon satisfactorily evaluation of its processes and systems and inspection of the production facilities
State of Design continuing airworthiness responsibilities

**State of Design**

- a. Transmit to every State that has advised that it has an aircraft on its register and any State on request, any applicable information that is necessary for the continuing airworthiness and safe operations of the aircraft. Also notify States of the suspension or revocation of a TC.

- b. Ensure there is a system for:
  - Receiving information on faults, malfunctions, defects and other occurrences that cause and might cause adverse effects on the continuing airworthiness of the aircraft
  - Deciding if and when airworthiness action is needed
  - Developing the necessary airworthiness actions
  - Promulgating the information on those actions

- c. Ensure a continuing SIP for aeroplanes over 5700kgs

- d. Ensure where the State of Manufacture is not the State of Design, there is an agreement acceptable to both States to ensure that the type design organization cooperates with the manufacturing organization in assessing information received on experience with operating the aircraft.
State of Manufacture continuing airworthiness responsibilities

Ensure where the State of Manufacture is not the State of Design, there is an agreement acceptable to both States to ensure that the manufacturing organization cooperates with the type design organization in assessing information received on experience with operating the aircraft.
Module 5 - Part IV of Doc 9760
State of Design

**Type certification activities**

- Application for a type certificate
- Establishing the certification basis
- Establishing the means of compliance
- Demonstration of compliance
- Certifying the type design
- Post type certification activities
Module 5 - Part IV of Doc 9760
State of Design

Absence of or deficiency by a TC holder

✓ Cease to legally exist
✓ Abandon its responsibilities (surrender TC)
✓ Fail in its responsibilities (suspension / revoke TC)

What can a State of Design do?

✓ assume the limited responsibilities of the TC holder itself
✓ seek a new holder
✓ suspend or revoke the TC if no other options are available
Suspension or revocation of a TC

- Annex 8 Part II 4.2.1.1 requires the State of Design to notify Contracting States of the suspension or revocation of a type certificate.

- Annex 8 Part II 4.2.3 ultimately assigns the State of Registry the responsibility for determining the continuing airworthiness of the aircraft in its aircraft register.

- The State of Registry is required to develop or adopt requirements necessary for ensuring the continuing airworthiness of the aircraft in its aircraft register during its service life.
Module 5 - Part IV of Doc 9760
State of Design and State of Manufacture

Summary

✓ Brief description of the content of Part V
✓ Key responsibilities of the State of the Design and State of Manufacture
✓ Type certification activities
✓ Absence of or deficiency by a type certificate holder
✓ Continuing airworthiness responsibilities of the State of the Design and State of Manufacture
Module 5 - Part IV of Doc 9760
State of Design and State of Manufacture

Questions?
Quiz

1. How many Parts are there in 3rd edition of Doc 9760?
   5 Parts

2. Where can you find guidance to the structure for an Airworthiness Organisation?
   Part II, Chapter 4

3. Whose responsibility is it to issue a Certificate of Airworthiness?
   State of Registry, Part III Chapter 4

4. A Maintenance Organisation approval is granted by whom?
   State of Registry, Part III Chapter 10

5. How many phases are in the process for the grant of an Air Operator Certificate?
   5 Phases, Part IV Chapter 2
Quiz

6. Who grants the approval for Extended Diversion Time Operations?
   State of the Operator, Part IV Chapter 5

7. What are the State of Registry’s responsibilities for continuing airworthiness?
   Part III, Chapter 1

8. Which State approves Major repairs and modifications?
   State of Registry, Part III, Chapter 8

9. What are the State of Design’s responsibilities for continuing airworthiness?
   Part V, Chapter 6

10. Whose responsibility is it to issue the Mandatory Continuing Airworthiness Instruction?
    State of Design, Part V, Chapter 6.9
    State of Registry, Part III, Chapter 9.5
11. Whose responsibility is it to approve the Maintenance Programme?
   State of Registry, Part III, Chapter 7.3

12. Who approves the Reliability Programme?
   State of Registry, Part III, Chapter 7.4

13. Can an aircraft be registered in more than one State?
    No, Part III, Chapter 2.2.2

14. Can one airplane have a different States of Registry than the State of the Operator?
    Yes, Part IV, Chapter 6.1
Review of objectives

At the end of this seminar the participant would be able to identify, with reference to the ICAO Doc 9760:

✓ the structure of an Airworthiness Organization and the airworthiness responsibilities of States

✓ the roles and responsibilities of the State of Registry, State of Operator and State of Design and Manufacture.
Doc 9760 – What’s next?

Revision 1 (possibly late 2015)

- Enhance guidance on the approval of AMOs
- More guidance provided to the State of Registry when type certificates are suspended, surrendered or revoked?
- Recognition of aircraft below 750kgs?
- New guidance on handling of security sensitive ADs?
- Additional guidance on reviewing the airworthiness provisions for RVSM approval
- Provide guidance on the maintenance of a aircraft register
Doc 9760 (Airworthiness Manual)

Queries and comments:
Alain Coutu, Technical Officer (Airworthiness) at acoutu@icao.int
Sebastian Wong at swong@icao.int