

Explanatory Notes

ICAO

- 1 ICAO SARP Annexes directly related to Continuing Airworthiness: Annex 1 (Personnel Licensing); Annex 6 (Operation of Aircraft); Annex 8 (Airworthiness of Aircraft); Annex 13 (Aircraft Accident and Incident Investigation); Annex 19 (Safety Management)
- 2 Publications – Technical Documents, Circulars, Digests and Training Programmes eg Airworthiness Manual Doc 9760; Human Factors Training Manual Doc 9683; Safety Management Manual Doc 9859, Safety Oversight Manual Doc 9734; Human Factors Guidelines for Aircraft Maintenance Manual Doc 9824

ICAO Member State Regulatory Authorities - National Aviation Authorities

- 3 Since its establishment in 2003, many of the responsibilities of the EU Member States' NAAs have been transferred to European Aviation Safety Agency (EASA). While each member states may apply specific additional mandatory airworthiness requirements to aircraft on its registry, rulemaking for all airworthiness related matters as well as certification of new aircraft/engine types and any major modifications (i.e. Supplemental Type Certificates) are the responsibilities of EASA; however NAAs are still responsible for the oversight of organisations (except design) and enforcement of common European airworthiness regulations within their own territory.

There are many 'Bilateral Aviation Safety Agreements' (BASAs) between states, which have responsibility for type design in their territory and the BASA between USA and EU, which entered into force in May 2011 is one of the most significant of such agreements and aims to harmonize regulations on airworthiness & environmental certification as well as maintenance.

- 4 Proposed amendments to regulations are issued by the responsible authorities – FAA NPRMs (Notice of Proposed Rule Making) – EASA NPAs (Notice of Proposed Amendments)
- 5 Type Certificate (TC) – Type Certificate Data Sheet (TCDS) is the baseline document for the models & variants of aircraft or engines with important detailed technical information.
- 6 DER- FAA Delegated Engineering Representative and/or ARS – EU Airworthiness Review Staff. An airworthiness review under CAMO approval is a periodic review of an aircraft and its records to ensure it meets airworthiness requirements.
- 7 MSG (Maintenance Steering Group) – constituted from Authority and Industry specialists – leads to MRBR (Maintenance Review Board Report) to develop the basic approved minimum Maintenance Programme Document (MPD). Used by every operator to develop its own customized approved type maintenance programme.
- 8 Independent Accident Investigation Bodies such as US NTSB, Canadian TSB, UK AAIB, French BEA, German BFU, Australian ATSB. Most of the investigation bodies are independent from the regulatory authority but in some countries accidents are investigated by independent commissions established within the National Aviation Authorities.

Certified Air Operator/ Carrier (AOC)

- 9 MEL (Minimum Equipment List) is particular for each aircraft type and operator. Derived from MMEL (Master Minimum Equipment List) developed by Approved Type Certification Organisation. Extended Range Operations (ETOPS) – Certified Operator responsible for Operations and Maintenance Standards
- 10 Occurrence Reporting Schemes – Data collection, Control, Investigation, Follow-up Feedback to Approved Type Certificate Organisation/ Regulatory Authority. EASA Member States programme (ECCAIRS). Confidential Reporting Programmes eg. ASRS (USA), CHIRP (UK)

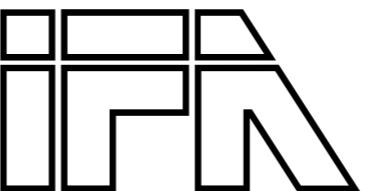
Approved Design & Production Organisations - Aircraft, Related Products and Parts

- 11 Includes Sub Contractor standards
- 12 System Safety Assessment (SSA) is used to determine failure effects to specified Requirements (eg FAR/EASA - CS 25.1309 - target failure rates and effects, also SAE Aerospace Recommended Procedures, Doc ARP4761). SSA also used to determine CMRs (Certification Maintenance Requirements) and SSIs (Structural Significant Items). Used in MSG analysis to determine inspection items in Maintenance Programmes.

Approved Maintenance & Repair Organisations (MRO)

- 13 Control of Maintenance Standards and Records - includes Sub-Contracted work. Applicable EASA/FARs are Part 145 (Approved Maintenance Organisation); Part 147 (Approved Maintenance Training Organisations); EASA Part 66/FAR Part 65 (Aircraft Maintenance Licence/Certification of Mechanics)
- 14 Incorporation of ADs (Airworthiness Directives) - Mandatory. Incorporation of SBs (Service Bulletins) - Optional SB's as assessed by AOC holder.
- 15 Basic Engineer and/or Type Training - carried out in Approved School eg. (EASA/FAR 147). Human Factors training is a Licensing requirement under ICAO Annex 1 Information is given in ICAO Airworthiness Manual Doc 9760 and ICAO Human Factors Training Manual Doc 9683

NEVER FORGET: IT IS OFTEN THE SIMPLE PROCEDURAL ERRORS WHICH LET US DOWN - NOT THE TECHNOLOGY



INTERNATIONAL FEDERATION OF AIRWORTHINESS

CONTINUING AIRWORTHINESS

The basic story

Definitions

Continuing Airworthiness – *all of the processes ensuring that, at any time in its life, an aeroplane complies with the technical conditions fixed to the issue of the Certificate of Airworthiness and is in a condition for safe operation (ICAO Document No 9713)*

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. (ICAO Annex 8)

Airworthiness – *Fitness for flight operations, in all possible environments and foreseeable circumstances for which aircraft or device has been designed (Janes Aerospace Dictionary)*

Airworthy - *The status of an aircraft, engine, propeller or part when it conforms to its approved design and is in a condition for safe operation. (ICAO Annex 8)*

Purpose of document

This document has been prepared by the *International Federation of Airworthiness* to assist the understanding of the basic Continuing Airworthiness requirements and control functions.

These functions are often interdependent and their interaction may be complex because requirements span both time, with its technological progress, and a broad spectrum of aircraft types and sizes. The process of Continuing Airworthiness flows from the initial type certification, maintenance and operational regulatory authority approvals; these functions are included in the listing as a base reference.

The listing of control processes applies to both Commercial Air Transport and Cargo aircraft, as specified by the National Aviation Authority. Many of the functions also apply to non-Commercial Air Transport aircraft.

For practical reasons it is not possible to show any of the linkages between the major functions listed on the centre fold – they are many and detailed and require a full understanding of applicable content. Any unique requirements for a specific ICAO Member State must be determined.

Explanatory notes are given on the back page.

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IFA has its main interest in promoting internationally improved knowledge and understanding of Airworthiness issues, through its Technical Committee, combining a wide range of aviation disciplines and worldwide experience. Members participate in international committees, meetings and conferences.

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CONTINUING AIRWORTHINESS – Functions & Responsibilities

ICAO

- Definition – Member State responsibilities (Convention 1944)
- Issue – International Standards & Recommended Practices (SARPs) (1)
- Issue – Technical Guidance Publications (2)

ICAO

ICAO Member States Regulatory Authorities

National Aviation Authorities (NAA)

State Regulatory Authorities – National Aviation Authorities (3)

- ICAO Member States are responsible for the implementation of ICAO International Standards and Recommended Practices (SARPs) by issuing their own legislation within their territory. In case they cannot achieve this, they are obliged to file differences and notify ICAO
- Establish and maintain a State Safety Programme (SSP) (ICAO Annex 19)
- Issue & Control – Legislation/Regulations. Usually the rulemaking process starts with Proposed Amendments (eg. NPRM/NPA), which enable consultation with the industry (4)
- Issue – Aircraft/Engine Type Certificates (TC) & (TCDS) (5)
- Issue/Revoke – Certificates of Registration, Airworthiness & Export
- Issue Approval – Design, Production, Continuing Airworthiness Management (CAMO), Maintenance (MRO) & Maintenance Training Organisations
- Issue – Air Operators Certificates (AOC) & Approve Manuals & Expositions
- Approve – Modifications (eg STC – Supplementary Type Certificates)
- Approve/Issue – Airworthiness Directives (ADs) & Service Bulletins (SBs)
- Issue – Personnel Licences & Approvals (eg. DER, ARS) (6)
- Issue – Advisory Circulars, Acceptable Means of Compliance, Guidance Material, Certification Specifications and airworthiness technical standards.
- Control – MSG/MRB procedures (7)
- Approve – Maintenance Review Board Reports (MRBR) - state /authority issuing TC/TCDS, Maintenance Programmes and Reliability Programmes
- Approve – Ageing Aircraft and Systems Programmes
- Issue – Requirements – Occurrence Reporting, analysis and feedback schemes(10)
- Establish State Occurrence Reporting, analysis and feedback scheme, confidential reporting schemes as prescribed by individual state authorities. (10)
- Establish – Accident/Incident Investigation Board (eg NTSB, TSB, AAIB, BEA, BFU, ATSB) (8)
- Respond – Accident/Incident Investigation Board Recommendations (eg EASA, FAA, TCCA, CAA, LBA, DGAC, CASA)
- Oversight & Enforcement - Auditing/Monitoring – Design, production, operations, maintenance and maintenance training standards
- Issue Requirements & Approve – Extended Range Operations (ETOPS)
- Approve – Master Minimum Equipment List (MMEL)/Operator MEL (9)
- Issue & Control – Continuing Airworthiness policy practices and procedures and Authority internal procedures

CONTINUING AIRWORTHINESS

Approved Design & Production Organisations Aircraft, Engines and Related Products & Parts (OEM)

- Control – Type Certification standards (Design and/or Production) (11)
- Establish – Airworthiness Office – Control Certification Procedures
- Prepare & Control – System Safety Assessment (12)
- Prepare & Control – Flight Manual
- Prepare & Control – Type Certificates & Type Certificate Data Sheets
- Control – Certificate of Airworthiness/Modifications Flight Testing
- Prepare & Control – Master Minimum Equipment List (MMEL) (9)
- Prepare & Control – Both Initial and Continuing Airworthiness Procedures for all special operations approvals (i.e. RVSM, ETOPS, AWO, RNP etc)
- Prepare & Control – ADs and SBs and STCs
- Establish – Occurrence Reporting/Investigation & Follow-up scheme (10)
- Control – Maintenance Review Board Report (MRBR) Development & Review Procedure
- Issue & Control – Instructions for Continued Airworthiness (ICAs) (e.g. AMM, FIM, WDM, SRM, IPC, OHM etc.)
- Issue – Safety & Guidance information for Products - technical manuals (Maintenance Repair and Parts)
- Establish & Control – Quality Management System
- Establish & Maintain – Safety Management System (SMS)

Approved Maintenance Training Organisations

- Develop & Deliver – Basic & Type Training (15)
- Conduct - Examinations
- Establish & Maintain – Safety Management System (SMS)

Approved Maintenance & Repair Organisations (MRO)

- Control Maintenance standards (incl Sub Contractors) (13)
- Control – Maintenance Planning & Technical Manuals
- Issue & Control – Authorised Personnel (Certifying Staff)
- Incorporation – ADs and SBs & Approved Modifications (eg STC) (14)
- Establish & Control – Quality Management System
- Certification – Maintenance/Release to Service
- Control – Maintenance Records (incl Sub Contractors)
- Control – Maintenance Personnel Training & Records
- Establish – Occurrence Reporting/Investigation & Follow-up scheme (10)
- Issue & Control – Organisation Technical/Procedures
- Training – Maintenance Engineer Type/Procedures including Human Factors (15)
- Establish & Maintain – Safety Management System (SMS)

Air Operator Certificate (AOC) Holders

Approved Continuing Airworthiness Management Organisations (CAMO)

- Control – AOC standards (Operations & Maintenance)
- Control – Flight Operations Manual
- Control – Maintenance/Reliability Programmes
- Issue & Control Organisation technical/procedures
- Establish & Control – Quality Management System
- Establish & Control – Maintenance & Training records
- Prepare & Control – Minimum Equipment List (MEL) (9)
- Control – In-service Airworthiness Flight Testing
- Control airworthiness standards – Special Operational Approvals (e.g. RVSM, ETOPS, AWO, RNP)
- Establish – Occurrence Reporting/Investigation & Follow-up scheme (10)
- Control – Aircraft/Crew Leasing standards
- Control Training – Flight Crew & Maintenance including records
- Establish & Maintain – Safety Management System (SMS)
- Establish & Control Airworthiness Reviews and issue/extension ARC (6)