Module 10

FOR B1 & B2 CERTIFICATION

AVIATION LEGISLATION

Aviation Maintenance Technician Certification Series

- Regulatory Framework
- Certifying Staff/Maintenance
- Approved Maintenance Organizations
- Air Operations
- Certification of Aircraft, Parts and Appliances
- Continuing Airworthiness
- Applicable National and International Requirements

COMPLIANT WITH EASA

European Aviation Safety Agency

EASA PART 66/147

EASA Part-66
Aviation Maintenance Technician Certification Series

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EASA PART 66/147

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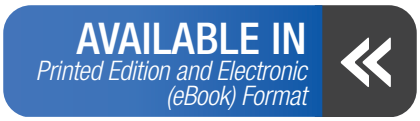

AVIATION MAINTENANCE TECHNICIAN CERTIFICATION SERIES

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WELCOME

The publishers of this Aviation Maintenance Technician Certification Series welcome you to the world of aviation maintenance. As you move towards EASA certification, you are required to gain suitable knowledge and experience in your chosen area. Qualification on basic subjects for each aircraft maintenance license category or subcategory is accomplished in accordance with the following matrix. Where applicable, subjects are indicated by an "X" in the column below the license heading.

For other educational tools created to prepare candidates for licensure, contact Aircraft Technical Book Company.

We wish you good luck and success in your studies and in your aviation career!

REVISION LOG

VERSION	EFFECTIVE DATE	DESCRIPTION OF CHANGE
001	2014 02	Module Creation and Release
002	2017 05	Format Update / Addition of Part-T in Sub-Module 06 - Page 6.14

FORWARD

PART-66 and the Acceptable Means of Compliance (AMC) and Guidance Material (GM) of the European Aviation Safety Agency (EASA) Regulation (EC) No. 1321/2014, Appendix 1 to the Implementing Rules establishes the Basic Knowledge Requirements for those seeking an aircraft maintenance license. The information in this Module of the Aviation Maintenance Technical Certification Series published by the Aircraft Technical Book Company meets or exceeds the breadth and depth of knowledge subject matter referenced in Appendix 1 of the Implementing Rules. However, the order of the material presented is at the discretion of the editor in an effort to convey the required knowledge in the most sequential and comprehensible manner. Knowledge levels required for Category A1, B1, B2, and B3 aircraft maintenance licenses remain unchanged from those listed in Appendix 1 Basic Knowledge Requirements. Tables from Appendix 1 Basic Knowledge Requirements are reproduced at the beginning of each module in the series and again at the beginning of each Sub-Module.

How numbers are written in this book:
This book uses the International Civil Aviation Organization (ICAO) standard of writing numbers. This method displays large numbers by adding a space between each group of 3 digits. This is opposed to the American method which uses commas and the European method which uses periods. For example, the number one million is expressed as so:

ICAO Standard	1 000 000
European Standard	1.000.000
American Standard	1,000,000

SI Units:
The International System of Units (SI) developed and maintained by the General Conference of Weights and Measures (CGPM) shall be used as the standard system of units of measurement for all aspects of international civil aviation air and ground operations.

Prefixes:
The prefixes and symbols listed in the table below shall be used to form names and symbols of the decimal multiples and submultiples of International System of Units (SI) units.

MULTIPLICATION FACTOR		PREFIX	SYMBOL
1 000 000 000 000 000 000	$= 10^{18}$	exa	E
1 000 000 000 000 000	$= 10^{15}$	peta	P
1 000 000 000 000	$= 10^{12}$	tera	T
1 000 000 000	$= 10^{9}$	giga	G
1 000 000	$= 10^{6}$	mega	M
1 000	$= 10^{3}$	kilo	k
100	$= 10^{2}$	hecto	h
10	$= 10^{1}$	deca	da
0.1	$=10^{-1}$	deci	d
0.01	$= 10^{-2}$	centi	c
0.001	$= 10^{-3}$	milli	m
0.000 001	$= 10^{-6}$	micro	μ
0.000 000 001	$= 10^{-9}$	nano	n
0.000 000 000 001	$= 10^{-12}$	pico	p
0.000 000 000 000 001	$= 10^{-15}$	femto	f
0.000 000 000 000 000 001	$= 10^{-18}$	atto	a

International System of Units (SI) Prefixes

EASA LICENSE CATEGORY CHART

1	Mathematics	X	X	X	X	X
2	Physics	X	X	X	X	X
3	Electrical Fundamentals	X	X	X	X	X
4	Electronic Fundamentals		X	X	X	X
5	Digital Techniques / Electronic Instrument Systems	X	X	X	X	X
6	Materials and Hardware	X	X	X	X	X
7A	Maintenance Practices	X	X	X	X	X
8	Basic Aerodynamics	X	X	X	X	X
9A	Human Factors	X	X	X	X	X
10	Aviation Legislation	X	X	X	X	X
11A	Turbine Aeroplane Aerodynamics, Structures and Systems	X	X			
11B	Piston Aeroplane Aerodynamics, Structures and Systems			X		
12	Helicopter Aerodynamics, Structures and Systems				X	
13	Aircraft Aerodynamics, Structures and Systems					X
14	Propulsion					X
15	Gas Turbine Engine	X	X		X	
16	Piston Engine			X		
17A	Propeller	X	X	X		

MODULE 10 SYLLABUS AS OUTLINED IN PART-66, APPENDIX 1.

	LEVELS	
CERTIFICATION CATEGORY →	B1	B2
Sub-Module 01 - Regulatory Framework		
Role of the International Civil Aviation Organization; Role of the European Commission; Role of EASA; Role of the Member States and National Aviation Authorities; Regulation (EC) No 216/2008 and its implementing rules, Regulations (EC) 1702/2003 and 2042/2003; Relationship between the various Annexes (Parts) such as Part-21, Part-M, Part-145, Part-66, Part-147 and Air Operations.	1	1
Sub-Module 02 - Certifying Staff — Maintenance		
Detailed understanding of Part-66.	2	2
Sub-Module 03 - Approved Maintenance Organizations		
Detailed understanding of Part-145 and Part-M Subpart-F.	2	2

	LEVELS	
CERTIFICATION CATEGORY →	B1	B2
Sub-Module 04 - Air Operations		
General understanding of Air Operations; Air Operators Certificates; Operator's responsibilities, in particular regarding continuing airworthiness and maintenance; Aircraft Maintenance Programme; MEL/CDL; Documents to be carried on board; Aircraft placarding (markings).	1	1
Sub-Module 05 - Certification of Aircraft, Parts and Appliances		
(a) General; General understanding of Part-21 and EASA certification specifications CS-23, 25, 27, 29.	1	1
(b) Documents; Certificate of Airworthiness; restricted certificates of airworthiness and permit to fly; Certificate of Registration; Noise Certificate; Weight Schedule; Radio Station License and Approval.	2	2
Sub-Module 06 - Continuing Airworthiness		
Detailed understanding of Part-21 provisions related to continuing airworthiness; Detailed understanding of Part-M.	2	2
Sub-Module 07 - Applicable National and International Requirements		
(a) Maintenance Programmes, Maintenance checks and inspections; Airworthiness Directives; Service Bulletins, manufacturers service information; Modifications and repairs; Maintenance documentation: maintenance manuals, structural repair manual, illustrated parts catalogue, etc.; Only for A to B2 licenses: Master Minimum Equipment Lists, Minimum Equipment List, Dispatch Deviation Lists;	2	2
(b) Continuing airworthiness; Minimum equipment requirements - Test flights; Only for B1 and B2 licenses: ETOPS, maintenance and dispatch requirements; All Weather Operations, Category 2/3 operations.	1	1

AVIATION LEGISLATION

SUB-MODULE 01

REGULATORY FRAMEWORK

SUB-MODULE 02

CERTIFYING STAFF — MAINTENANCE

CONTENTS

SUB-MODULE 05
CERTIFICATION OF AIRCRAFT, PARTS AND APPLIANCES

SUB-MODULE 06
CONTINUING AIRWORTHINESS

AVIATION LEGISLATION

REGULATORY FRAMEWORK

SUB-MODULE 01

PART-66 SYLLABUS **LEVELS**

CERTIFICATION CATEGORY →	B1	B2

Sub-Module 01

REGULATORY FRAMEWORK

Knowledge Requirements

10.1 - Regulatory Framework		
Role of the International Civil Aviation Organization;	1	1
Role of the European Commission;		
Role of EASA;		
Role of the Member States and National Aviation Authorities;		
Regulation (EC) No 216/2008 and its implementing rules Regulations (EC) 1702/2003 and 2042/2003;		
Relationship between the various Annexes (Parts) such as Part-21,		
Part-M, Part-145, Part-66, Part-147 and EU-OPS.		

Level 1
A familiarization with the principal elements of the subject.

Objectives:

(a) The applicant should be familiar with the basic elements of the subject.
(b) The applicant should be able to give a simple description of the whole subject, using common words and examples.
(c) The applicant should be able to use typical terms.

INTERNATIONAL CIVIL AVIATION ORGANIZATION (ICAO)

ICAO is a specialized agency of the United Nations (UN) created through the Chicago Convention on International Civil Aviation signed on the 7th of December, 1944. Its headquarters are located in Montreal. (***Figure 1-1***)

On 1 November 1944, representatives from 54 nations met in Chicago to establish a framework to regulate the development of worldwide civil aviation. Fifty-two countries signed the "Chicago Convention". It had to be ratified by 26 states to come into force. As an interim, an international aviation intermediate agreement was adopted. This gave birth to the Provisional International Civil Aviation Organization (PICAO) charged with follow up work for the fledgling organization.

PICAO functioned as a provisional organization until the 4th of April 1947. ICAO as it is known today was born after the 26th state ratified the Chicago Convention. In October 1947, ICAO became a specialized United Nations agency linked to the Economic and Social Council of the U.N. Today, ICAO consists of 190 signatory states, of which only three are not members.

Figure 1-1. ICAO headquarters in Montreal, Canada.

THE CHICAGO CONVENTION

The Chicago Convention defines the rights and obligations of the signatory states regarding the operation of aircraft. After working for five weeks on the problems effecting international civil aviation, the representatives of 52 States present established a new convention. The goals of this convention related to international civil aviation were cited in the Preamble as follows:

- WHEREAS the future development of international civil aviation can greatly help to create and preserve friendship and understanding among the nations and peoples of the world, yet its abuse can become a threat to the general security; and
- WHEREAS it is desirable to avoid friction and to promote that co-operation between nations and peoples upon which the peace of the world depends;
- THEREFORE, the undersigned governments having agreed on certain principles and arrangements in order that international civil aviation may be developed in a safe and orderly manner and that international air transport services may be established on the basis of equality of opportunity and operated soundly and economically; have accordingly concluded this Convention to that end."

During the 5 weeks that it sat, the conference produced 6 important documents:

- *The Convention on International Civil Aviation.* (The Chicago Convention)
- *The Interim Agreement on International Civil Aviation* (PICAO).
- *The International Air Services Transit Agreement or "Two Freedom" agreement.*
- *The International Air Transport Agreement or "Fifth Freedom" agreement.*
- *The drafts of twelve Technical Annexes.*
- *A standard form of Bilateral Agreement for the exchange of routes and air services.*

SECOND FREEDOM AGREEMENT

The International Air Services Transit Agreement or "Two Freedom" agreement is an agreement under which the aircraft of Member States may fly over each other's territory for non-traffic purposes (i.e. refueling). This particular document was a great step forward in the path of international air transport development over a large part of the world.

FIFTH FREEDOM AGREEMENT

Another important document/agreement developed was the Fifth Freedom Amendment. It states that each Member State grants to other Member States:

- the "Second Freedom" agreed rights
- the right to offload passengers / freight uploaded in the country of origin of the aircraft
- the right to upload passengers / freight destined for the country of origin of the aircraft
- the right to upload / offload passengers destined or coming from any Member State.

ICAO GOALS AND OBJECTIVES

ICAO's aims and objectives are to draw up the principles and techniques of international air navigation and to promote the planning and development of international air transport so as to:

- Foster the planning and development of international air transport so as to ensure the safe and orderly growth of international civil aviation throughout the world;
- Encourage the arts of aircraft design and operation for peaceful purposes;
- Encourage the development of airways, airports, and air navigation facilities for international civil aviation;
- Meet the needs of the peoples of the world for safe, regular, efficient, and economical air transport;
- Prevent economic waste caused by unreasonable competition;
- Ensure that the rights of contracting states are fully respected and that every contracting state has a fair opportunity to operate international airlines;
- Avoid discrimination between contracting states;
- Promote safety of flight in international air navigation;
- Generally promote the development of all aspects of international civil aeronautics.

ICAO COMPOSITION AND CONCERNS

According to the terms of the Convention, the Organization is made up of an Assembly, a Council of limited membership with various subordinate bodies and a Secretariat. The Chief Officers are the President of the Council and the Secretary General.

The Assembly, composed of representatives from all contracting states, is the sovereign body of ICAO. It meets every three years. The assembly reviews in detail the work of the Organization and sets policy for the coming years. It also votes a triennial budget.

The Council is a governing body elected by the Assembly for a three-year term. It is composed of 36 states. The Assembly chooses the Council Member States from three categories: states of chief importance in air transport, states which make the largest contribution to the provision of facilities for air navigation, and states whose designation will ensure that all major areas of the world are represented. As the governing body, the Council gives continuing direction to the work of ICAO. It is in the Council that Standards and Recommended Practices are adopted and incorporated as Annexes to the Convention on International Civil Aviation. The Council is assisted by the Air Navigation Commission (technical matters), the Air Transport Committee (economic matters), the Committee on Joint Support of Air Navigation Services and the Finance Committee.

The Secretariat, headed by a Secretary General, is divided into five main divisions: the Air Navigation Bureau, the Air Transport Bureau, the Technical Cooperation Bureau, the Legal Bureau, and the Bureau of Administration and Services. In order that the work of the Secretariat shall reflect a truly international approach, professional personnel are recruited on a broad geographical basis.

ICAO works in close cooperation with other members of the United Nations family such as the World Meteorological Organization (WMO), the International Telecommunication Union (ITU), the Universal Postal Union, the World Health Organization (WHO) and the International Maritime Organization (IMO). Non-governmental organizations which also participate in ICAO's work include the International Air Transport Association IATA, the Airports Council International (ACI), the International Federation of Air Line Pilots' Associations IFALPA, and the International Council of Aircraft Owner and Pilot Associations (IAOPA).

The breadth of ICAO concerns include standardization in such areas as communication, navigation, and surveillance of aircraft as well as air traffic control management. It has established 9 regions for setting up installations and services such as airports, navigational aids, weather stations, communications, etc. Facilities

standards, customs formalities and public health are also issues for ICAO. In analyzes economic and legal question of concern to the international aviation community such as avoiding total deregulation and setting international law. ICAO is also involved in technical cooperation for development by communicating international data for the identification of future challenges in international aviation.

TECHNICAL ANNEXES

The ICAO Council has elaborated and adopted 18 technical annexes concerning the following aspects of international aviation as follows:

Annex 1: Personnel Licensing
Annex 2: Rules of the Air
Annex 3: Meteorological Service for International Air Navigation
Annex 4: Aeronautical Charts
Annex 5: Units of Measurement to be Used in Air and Ground Operations
Annex 6: Operation of Aircraft
Annex 7: Aircraft Nationality and Registration Marks
Annex 8: Airworthiness of Aircraft
Annex 9: Facilitation
Annex 10: Aeronautical Telecommunications
Annex 11: Air Traffic Services
Annex 12: Search and Rescue
Annex 13: Aircraft Accident and Incident Investigation
Annex 14: Aerodromes
Annex 15: Aeronautical Information Services
Annex 16: Environmental Protection
Annex 17: Security: Safeguarding International Civil Aviation Against Acts of Unlawful Interference
Annex 18: Safe Transport of Dangerous Goods by Air
Annex 19: Security Management

ANNEX 1 - PERSONNEL LICENSING

Of particular concern to maintenance personnel is Annex 1 entitled Personnel Licensing. As the title suggests, it deals with training and issuance of licenses as well as medical standards for pilots, crew, aircraft maintenance technicians, air traffic controllers, ground crew, and airport radio operators.

ANNEX 6 - OPERATION OF AIRCRAFT

The main object of this annex is to standardize, as much as possible, the operation of international air transport aircraft to ensure the best safety and efficiency of service. It is divided into three parts:

Part 1: Aircraft involved in international commercial air transport.
Part 2: Aircraft involved in international general aviation.
Part 3: International helicopter flights.

ANNEX 8 - AIRWORTHINESS OF AIRCRAFT

This annex is of importance to technicians in that it deals with the allowance of the import and export of aircraft, their exchange by way of lease agreements and charters, as well as in service operations.

ANNEX 10 - AERONAUTICAL TELECOMMUNICATIONS

Aeronautical telecommunication agreement and cooperation is required for successful international aviation operations. Annex 10 deals with issues related to aeronautical telecommunications. It subdivides this subject matter and addresses specific issues in a series of volumes as follows:

Volume 1: Radio Navigation Aids
Volume 2: Communications Procedures
Volume 3: Communications Systems
  Part 1 - Digital Data Communications Systems
  Part 2 – Voice Communications Systems
Volume 4: Surveillance Radar and Collision Avoidance System
Volume 5: Aeronautical Radio Frequency Spectrum Utilization

THE ROLE OF THE EUROPEAN COMMISSION (EC)

The European Commission is one of the institutions of the European Union (EU). (***Figure 1-2***) It is independent of the individual EU states and holds great powers. The European Commission represents and defends the European Union as a whole entity. It presents legislative proposals and oversees the application of policies and implementation of the EU budget.

Since 1 November 2004, the European Commission has a commissioner for each Member State (27 total commissioners). The Commission has a president, a vice president, who is also the representative for foreign affairs and safety policy, and 25 members each in charge of an individual area of concern (for example, regional policy, business, action on climate, etc.) In November of 2014, the number of commissioners was reduced to two thirds of the number of Member States (18 total).

Figure 1-2. European Commission headquarters in Brussels, Belgium.

The members of the Commission are chosen from Member State nationals following a fair rotation system between member countries. The Commission is responsible to the European Union parliament.

The Commission is assisted by a secretary general who prepares the work and ensures coordination between its branches and other institutions. The length of mandate of the Commission is five years as is the term of office of the European parliament. The commission meets at least once a week in Brussels, generally on a Wednesday, and during the monthly sessions of the European Parliament in Strasburg. (***Figure 1-2***)

The European Commission promotes the general interests of the EU and takes appropriate initiatives to that end. It ensures external representation of the EU with international organizations in most areas. The EC also provides delegations to third countries (non-EU states). European Commission responsibilities include:

1. Initiation of Legislative Power - most of the legislative acts of the Council (Council of Ministers of the European Union) require a proposal for such action from the Commission. The Council cannot amend a proposal without a unanimous ruling. The Commission can modify the proposal as long as the council has not ruled on it.
2. Guardianship of Treaties - the Commission ensures compliance with and enforcement of European law and secondary legislation (regulations, directives, decisions, etc.) under the control of the Court of Justice of the European Union (CJEU). It inquires, prevents and penalizes members for non-compliance with European treaties. It can appeal to the Court of Justice of the European Union if a state does not follow the opinion that the European Commission has previously sent.
3. Execution Power - the Commission is the body that executes policies and measures adopted by the Council of Ministers of the European Union. It administers the budget and manages common policies and funding. The Council monitors EC activities through various committees.

ROLE OF THE EUROPEAN AVIATION SAFETY AGENCY (EASA)

The European Aviation Safety Agency (EASA or the Agency) is the centerpiece of the European Union's strategy for aviation safety. Its mission is to promote and achieve the highest common standards of safety and environmental protection in civil aviation. EASA is the agency of the EU that looks after flight safety. It is based in Cologne (Germany) and became operational in September 2003. The agency employs over 400 agents from all European Union countries. (***Figure 1-3***)

The creation of EASA paved the way for a new EU legislation on safety and the environmental compatibility of civil aviation. The new Basic Regulation (EC) No 216/2008 entered into force on 8 April 2008 and sets out the tasks of the Agency.

EASA's mission is to promote the highest possible level of safety and environmental protection in civil aviation. It facilitates the free movement of goods, persons and services, promotes cases for regulatory and certification processes and assists Member States in meeting their obligations under ICAO. At the global level, EASA promotes and defends its views on the safety standards to be applied in civil aviation.

EASA RESPONSIBILITIES

At first, EU regulations merely established EASA and the basis for action in the field of certification of aeronautical products, organizations and persons involved in the design, production and maintenance of aircraft. In a second step, the Commission, assisted by EASA, gradually propose amendments as necessary to extend the scope of the text to any other field relevant to the safety of civil aviation. EASA currently has the following responsibilities:

- Provide technical expertise to the EU for new legislation.
- Implement and monitor the implementation of security policies including conducting inspections in Member States.
- Carry out the certification of aircraft and equipment.
- Issue licenses to organizations providing the design, manufacture and maintenance of aeronautical products.
- Allow operators of third countries (those outside the EU).
- Perform research and analysis into safety.

In 2009, the European Commission extended the areas of competence of EASA even further. The Agency is now also responsible for safety on airports and in air traffic management (ATM) as well as in Air Navigational Services (ANS).

Figure 1-3. EASA Headquarters as of June 2016; Konrad-Adenauer-Ufer D-50668 Cologne, Germany.

The Agency also has the power to conduct certain tasks for which collective action is more effective than action by individual Member States. In particular, EASA is responsible for the certification of aeronautical products. It also helps the Commission monitor the implementation of rules and safeguards that may be required. EASA provides technical assistance to aeronautical authorities of third countries and international organizations for safety and environmental compatibility of civil aviation. Finally, the Agency supports the European Union and its Member States in their cooperation with and assistance to third countries.

INDEPENDENCE AND SUPERVISION

To protect from political interference, decisions of safety must be undertaken by a neutral and independent authority with the necessary skills. EASA and its executive director are under the supervision of an independent board of the Agency, which is responsible for monitoring the proper application of EC measures and regulations. The executive director is appointed by the board that is composed of representatives from Member States and the Commission. The board, under the control of the Commission, defines priorities, sets the budget and monitors the operation of EASA.

INTERNATIONAL RECRUITMENT

It is the duty of EASA to enroll the largest possible number of European partners to its system. Regulations allow the involvement of all countries that agree to adopt and implement EU legislation in the field of air transport.

STUDIES AND RESEARCH

Through research and studies, the agency develops expertise on everything related to the safety of civil aviation. It develops legislation and implements measures to control the safety of aeronautical products through the communication with the organizations and individuals associated with their handling.

EASA INTERNAL STRUCTURE AND OPERATION

EASA is an independent body of the European Union with its own legal identity. It is headed and represented by its executive director. The Agency may, with the consent of the Member State concerned, establish local offices in any Member State.

STAFF AND LANGUAGE

The Agency's staff consists of a limited number of officials approved by the EC or Member States to carry out management duties. (***Figure 1-4***) Other employees are recruited by EASA on a limited basis, according to its requirements. All opinions addressed to the Commission concerning actions to be adopted must be made in all official languages of the community which are: Bulgarian, Czech, Danish, Dutch, English, Estonian, Finnish, French, Irish, German, Greek, Hungarian, Italian, Latvian, Lithuanian, Maltese, Polish, Portuguese, Romanian, Slovak, Slovenian, Spanish, and Swedish. Applications to the Agency for certification may be filed in any of the official languages of the Community and the Agency will reply in the same language.

MANAGEMENT BOARD

A management board is composed of one representative from each Member State and one representative from the Commission. The board elects a chairperson and a deputy chairperson from among its members. The term of office is three years and is renewable.

The management board exercises a supervisory function. It appoints the executive director, adopts the annual report and work program (after approval by the Commission) and makes budgetary decisions. The board dictates the working procedures to be followed by the Agency. This includes guidelines, which must be approved by the Commission for the allocation of certification tasks to qualified entities.

EXECUTIVE DIRECTOR

The executive director alone is empowered to adopt acts concerning safety and environmental protection. He or she decides on inspections and investigations and is the manager of the Agency. As such, the executive director is responsible for the preparation and implementation of the budget and work program as well as for all questions related to personnel.

BOARD OF APPEALS

A board of appeals is set up to review individual decisions taken by the Agency. There is a clear separation of functions between the board of appeals and the agency. The members of the board of appeal must be independent.

Figure 1-4. EASA Corporate structure.

Appeals may be lodged against:

- Decisions granting type certificates.
- Decisions made in the context of an investigation.
- Decisions relating to fees.

Appeals cause a deferral of an action taken by the Agency only when so decided by the Agency. Appeals may be made against final decisions only. Any person may appeal a decision addressed to, or of direct and individual concern to, that person.

The board of appeal may conclude its examination either by making a decision or by referring the case to the competent body of the Agency, in which case the Agency is bound by the reasoning of the board. Provision is made for review of the decisions of the board of appeals by the Court of Justice of the European Communities under the same terms as the review of EU acts. Member States may appeal against decisions taken by the Agency on type certification and on inspections.

WORKING METHODS

The management board develops transparent procedures for the adoption of opinions, acceptable means of compliance and guidance material. These procedures must ensure the use of the relevant expertise, wide consultation of all interested parties and the right of each Member State to be associated with the adoption process. Special procedures must be developed to allow the Agency to take immediate action in case of safety problems. Similar transparent procedures apply in the case of individual decisions.

The Agency and the qualified entities acting on its behalf may undertake the inspections and investigations necessary in order to perform the tasks assigned to them. The Agency conducts inspections in the Member States to verify that EASA regulations and implementing rules are applied correctly. The Agency is authorized to conduct the investigations required in order to issue any relevant certificates and ensure continued safety oversight.

FINANCIAL REQUIREMENTS

The Agency's budget is financed by a contribution from the EU fees. It charges fees for publications and training it provides. Financial control is ensured by the financial controller of the Commission. A court of auditors of the European Communities examines the Agency's accounts and publishes an annual report on EASA's activities. The discharge of the Agency budget is given to the Executive Director by the European Parliament. A financial regulation specifying the procedure to be followed in preparing and implementing the budget is adopted by the management board, after obtaining the agreement of the Commission and the opinion of the court of auditors.

	STANDARDS	CERTIFICATES
Airworthiness/Environment		
Type certificates	EASA/EC	EASA
Design Organization Approvals	EASA/EC	EASA
Individual Airworthiness Certificates	EASA/EC	CAA
Production Organization Approvals (EC)	EASA/EC	CAA
Production Organization Approvals (non-EC)	EASA/EC	EASA
Maintenance (145, Subpart-F, CAMO, 66, 147)		
Organizations (Non-EC country)	EASA	EASA
Organizations (EC country)	EASA/EC	CAA
Part-66 Licenses (Only issued by Member State)	EASA/EC	CAA

THE ROLE OF MEMBERS STATES

The role of EASA Member States is limited to providing expertise as appropriate for rulemaking and certification tasks. They issue individual airworthiness certificates and approvals to organizations and personnel in their territory. If required, the Member States take action on a case by case basis to ensure safety or appropriate operational flexibility.

EASA MEMBER STATES (32 AS OF MAY 2017)

Austria	Finland	Latvia	Portugal
Belgium	France	Liechtenstein	Romania
Bulgaria	Germany	Lithuania	Slovakia
Croatia	Greece	Luxembourg	Slovenia
Cyprus	Hungary	Malta	Spain
Czech Republic	Iceland	Netherlands	Sweden
Denmark	Ireland	Norway	Switzerland
Estonia	Italy	Poland	United Kingdom

SHARING OF ROLES

Many functions of the Member States are shared responsibilities with EASA as a whole or with the European Commission. Others are the sole responsibility of that country's Civil Aviation Authority.

MEMBER STATE OBLIGATION

Since the Community is a supranational organization, Member States may no longer issue their own rules, deviate from common rules, impose additional requirement to EASA rules, or conclude arrangements with third countries.

RULES AND AUTHORITY

The European Commission has adopted standards for rule making. The chart in ***Figure 1-5*** illustrates the establishing regulations and the locations of various functions under those regulations.

REGULATION (EC) 216/2008

Regulation (EC) 216/2008 of the European Parliament and of the EU Council was passed on 20 February 2008. It established common rules in the field of civil aviation and it established the European Aviation

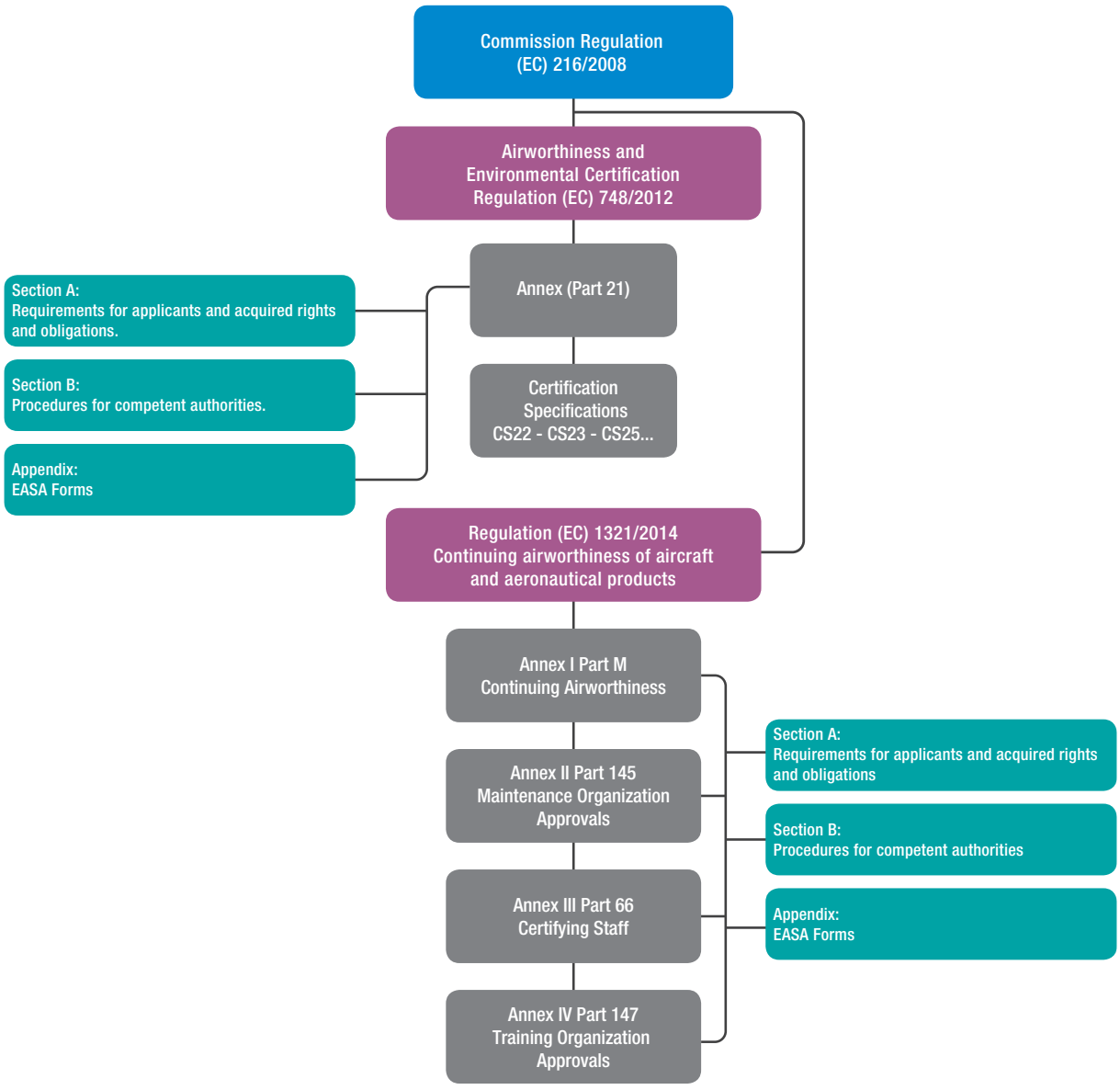


Figure 1-5. EASA regulations.

Safety Agency (EASA). In the process, it paved the way for EASA authority and development while repealing other Council directives on aviation previously on the books. This regulation applies to the design, production, maintenance and operation of aeronautical products, parts and appliances, as well as personnel and organizations involved in the design, production and maintenance of such products, parts and appliances. It also applies to personnel and organizations involved in the operation of aircraft. EC 216/2008 does not apply when products, parts, appliances, personnel and organizations are engaged in military, customs, police, or similar services. Member States must ensure that such services are practicable in their own countries and are aligned with objective set forth in EC 216/2008.

REGULATION (EC) 748/2012

Commission Regulation (EC) 748/2012 of 3 August 2012 established implementing rules for the airworthiness and environmental certification of aircraft and related products, parts and appliances, as well as for the certification of design and production organizations. It defines common technical requirements and administrative procedures for the airworthiness and environmental certification of products, parts and appliances. (EC) 748/2012 specifies and/or authorizes the following:

a. The issue of type-certificates, restricted type-certificates, supplemental type-certificates and changes to those certificates.
b. The issue of certificates of airworthiness, restricted certificates of airworthiness, permits to fly and authorized release certificates.
c. The issue of repair design approvals.
d. The showing of compliance with environmental protection requirements.
e. The issue of noise certificates.
f. The identification of products, parts and appliances.
g. The certification of certain parts and appliances.
h. The certification of design and production organizations.
i. The issue of airworthiness directives.

The following definitions apply in Regulation EC 1702/2003:

a. "JAA" means the "Joint Aviation Authorities".
b. "JAR" means "Joint Aviation Requirements".
c. "Part 21" means the requirements and procedures for the certification of aircraft and related products, parts and appliances, and of design and production organizations annexed to this Regulation.
d. "Part-M" means the applicable continuing airworthiness requirements adopted in pursuance to the basic Regulation.

REGULATION (EC) 1321/2014

Another Commission regulation (EC) 1321/2014 was passed on 26 November 2014. It deals with the continued airworthiness of aircraft and aeronautical products, parts and appliances, and the approval of organizations and personnel involved in these tasks. This Regulation establishes common technical requirements and administrative procedures for ensuring the continuing airworthiness of aircraft. This includes any component for installation on these aircraft that are either registered in a Member State or registered in a third country and used by an operator for which a Member State ensures oversight of operations. The provisions of (EC) 1321/2014 related to commercial air transport are applicable to licensed air carriers as defined by EU law.

AIR TRANSPORT EASA OPERATIONS

Aircraft used for commercial air transport must be maintained in an airworthy condition in accordance with Part-M of EASA regulations. Maintenance must be performed by a Part 145 approved maintenance organization using Part 66 qualified personnel trained in a Part 147 approved training center.

EASA RELATIONS WITH THE OTHER AVIATION AUTHORITIES

EASA rule making is tightly coordinated with international cooperation. The development of international standards may become EU law. There are agreements and international arrangements in place in the European Community which are considered during EASA operations. EASA works in concert with Member State national aviation authorities to be effective.

MULTILATERAL COOPERATION

EASA helps the EU and its Member States in harmonizing its rules and standards on the international level. In particular, specialists from the EASA regulatory directorate participate in the work of ICAO.

BILATERAL COOPERATION

The Agency acts in a way to promote circulation of European products and services throughout the world. It assists third country regulators with certification of European products and service providers. Reciprocally, European certificates may be issued on the basis of certificates having already been issued in third countries when there is sufficient confidence in the standards used by those countries. To do this, the EU must conclude bilateral agreements or arrangements dependent on the nature of the subject. Functioning arrangements have been concluded with Brazil, Canada, China, Israel, Japan, New Zealand, Russia, Saudi Arabia, Singapore, United States and the Committee of Aviation Interstates of the Community of Independent States.

DEVELOPING NATION ASSISTANCE

To ensure the highest level of civil aircraft safety, because European citizens travel throughout the world and because third country aircraft use EC airports, the EASA assists developing countries in improving their standardization rules. In these endeavors, the Agency acts in tandem with the European Commission on the development and execution of significant cooperation projects in Asia and Central America.

Question: 1-1
The Chicago Convention on civil aviation of 1944 defines the rights and obligations for the _____ of aircraft.

Question: 1-2
The International Air Services Transit Agreement that is known as the "Two Freedom" agreement allows aircraft to _____ the territory of signatory countries.

Question: 1-3
Annex 1 of ICAO is concerned with _____ licensing.

Question: 1-4
The _____ presents legislative proposals and oversees the application of policies and implementation of the EU budget.

Question: 1-5
EASA and its executive director are under the supervision of an _____ board of the Agency.

Question: 1-6
A _____ is set up to review individual decisions taken by the Agency.

Question: 1-7
Aircraft used for commercial air transport must be maintained in an airworthy condition in accordance with _____ of EASA regulations.

ANSWERS

Answer: 1-1
operation.

Answer: 1-2
overfly.

Answer: 1-3
personnel.

Answer: 1-4
European Commission (EC).

Answer: 1-5
independent.

Answer: 1-6
board of appeals.

Answer: 1-7
Part-M.

PART-66 SYLLABUS **LEVELS**

CERTIFICATION CATEGORY →	B1	B2
Sub-Module 02 CERTIFYING STAFF — MAINTENANCE Knowledge Requirements		
10.2 - Certifying Staff — Maintenance Detailed understanding of Part-66.	1	1

Level 2
A general knowledge of the theoretical and practical aspects of the subject and an ability to apply that knowledge.

Objectives:

(a) The applicant should be able to understand the theoretical fundamentals of the subject.
(b) The applicant should be able to give a general description of the subject using, as appropriate, typical examples.
(c) The applicant should be able to use mathematical formula in conjunction with physical laws describing the subject.
(d) The applicant should be able to read and understand sketches, drawings and schematics describing the subject.
(e) The applicant should be able to apply his knowledge in a practical manner using detailed procedures.

INTRODUCTION

Current EASA Part-66 succeeds the Joint Aviation Requirements (JARS) Part-66 that previously bound the European Union states in a collaborative aviation safety effort. EASA Part-66 sets forth the requirements applicable to aircraft maintenance staffs that issue certificates of 'release to service' of aircraft or aircraft parts under the framework of EASA Part 145. Approved Maintenance Organizations. A brief timeline of the evolution that has resulted in today's EASA Part-66 is as follows:

- Date of approval of the JAR66
  December 1997
- Beginning of Implementation of JAR66
  June 1st, 1998
- Mandatory Application of JAR66
  June 1st, 2001
- into force of EASA
  September 23rd, 2003
- Enter into force of EASA Part-66
  September 28th, 2004

GENERAL

The implementation of EASA Part-66 regulations (Annex III of the EC 1321/2014) is directly linked to EASA Part 145 requirements.

Part 145, paragraph 145.A.30 (g) and (h) specify:

g. Any organization maintaining aircraft, except where stated otherwise, shall in the case of aircraft line maintenance, have appropriate aircraft rated certifying staff qualified as category B1, B2, B3, as appropriate, in accordance with Annex III (Part-66) and point 145.A.35.

In addition, such organizations may also use appropriately task trained certifying staff holding the privileges described in points 66.A.20(a)(1) and 66.A.20(a)(3)(ii) and qualified in accordance with Annex III (Part-66) and point 145.A.35 to carry out minor scheduled line maintenance and simple defect rectification.

The availability of such certifying staff shall not replace the need for category B1, B2, B3 certifying staff, as appropriate.

h. Any organization maintaining aircraft, except where stated otherwise, shall in the case of base maintenance of large aircraft, have appropriate aircraft type rated certifying staff qualified as category C in accordance with Part-66 and 145.A.35. In addition the organization shall have sufficient aircraft type rated staff qualified as category B1 and B2 in accordance with Part-66 and 145.A.35 to support the category C certifying staff.

B1 and B2 support staff shall ensure that all relevant tasks or inspections have been carried out to the required standard before the category C certifying staff issues the certificate of release to service.

The organization shall maintain a register of any such B1 and B2 support staff.

The category C certifying staff shall ensure that compliance has been met and that all work required by the customer has been accomplished during the particular base maintenance check or work package, and shall also assess the impact of any work not carried out with a view to either requiring its accomplishment or agreeing with the operator to defer such work to another specified check or time limit.

DEFINITIONS

Within the scope of the basic Regulation, the following definitions shall apply:

- Aeroplane/Airplane: an engine driven fixed-wing aircraft heavier than air, that is supported inflight by the dynamic reaction of the air against its wings.
- Aircraft: any machine that can derive support in the atmosphere from the reactions of the air other than reactions of the air against the earth's surface.
- Airframe: the fuselage, booms, nacelles, cowlings, fairings, airfoil surfaces (including rotors but excluding propellers and rotating airfoils of engines), and landing gear of an aircraft and their accessories and controls.
- Certifying staff: personnel responsible for the release of an aircraft or a component after maintenance.

- Component: any engine, propeller, part or appliance.
- Continuing airworthiness: all of the processes ensuring that, at any time in its operating life, the aircraft complies with the airworthiness requirements in force and is in a condition for safe operation.
- Helicopter: a rotorcraft that, for its vertical motion, depends principally on its engine-driven rotors.
- EASA: European Aviation Safety Agency.
- Large Aircraft: an aircraft, classified as an aeroplane with a maximum takeoff mass of more than 5 700 kg, or a multiengined helicopter.
- Maintenance: any one or combination of overhaul, repair, inspection, replacement, modification or defect rectification of an aircraft or component, with the exception of preflight inspection.
- Organization: a natural person, a legal person or part of a legal person. Such an organization may be established at more than one location whether or not within the territory of the Member States.
- Preflight inspection: the inspection carried out before flight to ensure that the aircraft is fit for the intended flight.
- Propeller: a complete propeller including all parts attached to and rotating with the hub and blades, and all equipment required for the control and operation of the propeller.

PART-66

The basis of Part-66 is Annex III of Regulation (EC) 1321/2014.

SCOPE (66.A.1)

The following sections establish the requirements for the issue of an aircraft maintenance license and conditions of its validity and use for airplanes and helicopters. The Part-66 section(s) from which the information is taken is located in parenthesis and lettering or numbering of subsections is retained in most cases. A blank Part-66 license is shown in ***Figure 2-1***.

LICENSE CATEGORIES (66.A.3)

i. Aircraft maintenance licenses include the following categories:
   - Category A
   - Category B1
   - Category B2
   - Category B3
   - Category C

j. License categories A and B1 are subdivided into subcategories depending on the kind of aircraft and the type of powerplant(s) installed. These subcategories are:
   - A1 and B1.1 Airplanes Turbine
   - A2 and B1.2 Airplanes Piston
   - A3 and B1.3 Helicopters Turbine
   - A4 and B1.4 Helicopters Piston

k. Category B3 is applicable to piston-engine non-pressurized airplanes of 2000 kg MTOM and below.

AIRCRAFT GROUPS (66.A.5)

For the purpose of ratings on aircraft maintenance licenses, aircraft shall be classified in the following groups:

1. Group 1: complex engine powered aircraft as well as multiple engine helicopters, airplanes with maximum certified operating altitude exceeding FL290, aircraft equipped with fly-by-wire systems and other aircraft requiring an aircraft type rating when defined so by the Agency.
2. Group 2: aircraft other than those in Group 1 belonging to the following subgroups:
   - Sub-group 2a: single turbo-propeller engine airplanes
   - Sub-group 2b: single turbine engine helicopters
   - Sub-group 2c: single piston engine helicopters.
3. Group 3: piston engine airplanes other than those in Group 1.

APPLICATION (66.A.10)

Note: The "competent authority" specified below is typically the Civil Aviation Authority (CAA) of a country.

a. An application for an aircraft maintenance license or change to such license shall be made on an EASA Form 19 in a manner established by the competent authority and submitted thereto. (***Figure 2-2***)

b. The application for a change to an aircraft maintenance license shall be made to the competent authority of the Member State that issued the aircraft maintenance license.

I.
EUROPEAN UNION (*)
[STATE]
[AUTHORITY NAME & LOGO]

II.
Part-66
AIRCRAFT MAINTENANCE LICENCE

III.
Licence No [MEMBER STATE CODE].66.[XXXX]

EASA FORM 26 Issue 3

IVa. Full name of holder:

IVb. Date and place of birth:

V. Address of holder:

VI. Nationality of holder:

VII. Signature of holder:

III. Licence No:

VIII. CONDITIONS:

This licence shall be signed by the holder and be accompanied by an identity document containing a photograph of the licence holder.

Endorsement of any categories on the page(s) entitled Part-66 CATEGORIES only, does not permit the holder to issue a certificate of release to service for an aircraft.

This licence when endorsed with an aircraft rating meets the intent of ICAO annex 1.

The privileges of the holder of this licence are prescribed by Regulation (EC) No 2042/2003 and in particular its Annex III (Part-66).

This licence remains valid until the date specified on the limitation page unless previously suspended or revoked.

The privileges of this licence may not be exercised unless in the preceding two year period the holder has had either six months of maintenance experience in accordance with the privileges granted by the licence, or met the provision for the issue of the appropriate privileges.

III. Licence No:

IX. Part-66 CATEGORIES

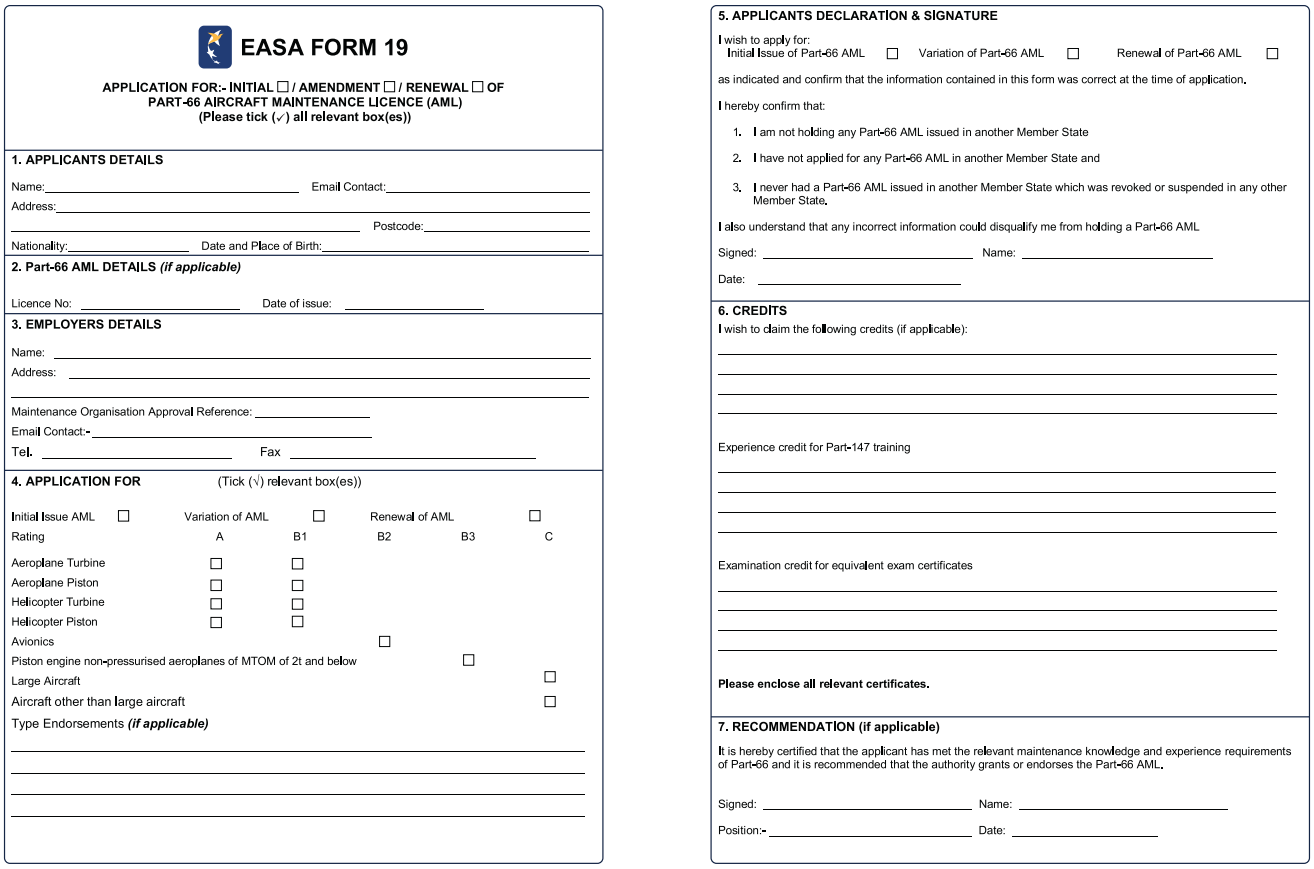
VALIDITY	A	B1	B2	B2L	B3	L	C
Aeroplanes Turbine			N/A		N/A	N/A	N/A
Aeroplanes Piston			N/A		N/A	N/A	N/A
Helicopters Turbine			N/A		N/A	N/A	N/A
Helicopters Piston			N/A		N/A	N/A	N/A
Avionics	N/A	N/A			N/A	N/A	N/A
Large Aircraft			N/A		N/A	N/A	
Aircraft Other Than Large			N/A		N/A	N/A	
Sailplanes, powered sailplanes, ELA1 aeroplanes, balloons and airships	N/A	N/A	N/A		N/A		N/A
Piston-engine non pressurized aeroplanes of 2 000 kg MTOM and below	N/A	N/A	N/A			N/A	N/A

X. Signature of issuing officer & date:

XI. Seal or stamp of issuing Authority:

III. Licence No:

Figure 2-1. A Part-66 aircraft maintenance license.



EASA FORM 19

APPLICATION FOR:- INITIAL ☐ / AMENDMENT ☐ / RENEWAL ☐ OF PART-66 AIRCRAFT MAINTENANCE LICENCE (AML)
(Please tick (✓) all relevant box(es))

1. APPLICANTS DETAILS

Name: _____ Email Contact: _____
Address: _____
_____ Postcode: _____
Nationality: _____ Date and Place of Birth: _____

2. Part-66 AML DETAILS *(if applicable)*

Licence No: _____ Date of issue: _____

3. EMPLOYERS DETAILS

Name: _____
Address: _____
_____
Maintenance Organisation Approval Reference: _____
Email Contact:- _____
Tel. _____ Fax _____

4. APPLICATION FOR (Tick (√) relevant box(es))

Initial Issue AML ☐ Variation of AML ☐ Renewal of AML ☐

Rating	A	B1	B2	B3	C
Aeroplane Turbine	☐	☐			
Aeroplane Piston	☐	☐			
Helicopter Turbine	☐	☐			
Helicopter Piston	☐	☐			
Avionics			☐		
Piston engine non-pressurised aeroplanes of MTOM of 2t and below				☐	
Large Aircraft					☐
Aircraft other than large aircraft					☐

Type Endorsements ***(if applicable)***
_____
_____
_____
_____

5. APPLICANTS DECLARATION & SIGNATURE

I wish to apply for:
Initial Issue of Part-66 AML ☐ Variation of Part-66 AML ☐ Renewal of Part-66 AML ☐

as indicated and confirm that the information contained in this form was correct at the time of application.

I hereby confirm that:

1. I am not holding any Part-66 AML issued in another Member State
2. I have not applied for any Part-66 AML in another Member State and
3. I never had a Part-66 AML issued in another Member State which was revoked or suspended in any other Member State.

I also understand that any incorrect information could disqualify me from holding a Part-66 AML

Signed: _____ Name: _____
Date: _____

6. CREDITS

I wish to claim the following credits (if applicable):
_____
_____
_____
_____

Experience credit for Part-147 training
_____
_____
_____
_____

Examination credit for equivalent exam certificates
_____
_____
_____
_____

Please enclose all relevant certificates.

7. RECOMMENDATION (if applicable)

It is hereby certified that the applicant has met the relevant maintenance knowledge and experience requirements of Part-66 and it is recommended that the authority grants or endorses the Part-66 AML.

Signed: _____ Name: _____
Position:- _____ Date: _____

Figure 2-2. Form 19 application for an aircraft maintenance license (AML).

c. In addition to the documents required in points 66.A.10(a), 66.A.10(b) and 66.B.105, as appropriate, the applicant for additional basic categories or subcategories to an aircraft maintenance license shall submit his/her current original aircraft maintenance license to the competent authority together with the EASA Form 19.

d. Where the applicant for change of the basic categories qualifies for such change via the procedure referred to in point 66.B.100 in a Member State other than the Member State which issued the license, the application shall be sent to the competent authority referred to in point 66.1.

e. Where the applicant for change of the basic categories qualifies for such change via the procedure referred to in point 66.B.105 in a Member State other than the Member State which issued the license, the maintenance organization approved in accordance with Annex II (Part-145) shall send the aircraft maintenance license together with the EASA Form 19 to the competent authority referred to in point 66.1 for stamp and signature of the change or reissue of the license, as appropriate.

f. Each application shall be supported by documentation to demonstrate compliance with the applicable theoretical knowledge, practical training and experience requirements at the time of application.

ELIGIBILITY (66.A.15)

An applicant for an aircraft maintenance license shall be at least 18 years of age.

PRIVILEGES (66.A.20)

The following privileges shall apply:

1. A category A aircraft maintenance license permits the holder to issue certificates of release to service following minor scheduled line maintenance and simple defect rectification within the limits of tasks specifically endorsed on the certification authorization referred to in point 145.A.35 of Annex II (Part-145). The certification privileges shall be restricted to work that the license holder has personally performed in the maintenance organization that issued the certification authorization.

2. A category B1 aircraft maintenance license shall permit the holder to issue certificates of release to service and to act as B1 support staff following:
   - Maintenance performed on aircraft structure, powerplant and mechanical and electrical systems,
   - Work on avionic systems requiring only simple tests to prove their serviceability and not requiring troubleshooting.
3. A category B2 aircraft maintenance license shall permit the holder to issue certificates of release to service and to act as B2 support staff for following:
   - Maintenance performed on avionic and electrical systems, and
   - Electrical and avionics tasks within power plant and mechanical systems, requiring only simple tests to prove their serviceability, and
   - Minor scheduled line maintenance and simple defect rectification within the limits of tasks specifically endorsed on the certification authorization referred to in point 145.A.35 of Annex II (Part-145). This certification privilege shall be restricted to work that the license holder has personally performed in the maintenance organization which issued the certification authorization and limited to the ratings already endorsed in the B2 license.
4. A category B3 aircraft maintenance license shall permit the holder to issue certificates of release to service and to act as B3 support staff for:
   - Maintenance performed on airplane structure, power plant and mechanical and electrical systems;
   - Work on avionic systems requiring only simple tests to prove their serviceability and not requiring troubleshooting.

   The category B3 license does not include any A subcategory. Nevertheless, this does not prevent the B3 license holder from releasing maintenance tasks typical of the A1.2 subcategory for piston engine nonpressurized aeroplanes of 2 000 Kg MTOM and below, within the limitations contained in the B3 license.
5. A category C aircraft maintenance license shall permit the holder to issue certificates of release to service following base maintenance on aircraft. The privileges apply to the aircraft in its entirety.

   The category C license permits certification of scheduled base maintenance by the issue of a single certificate of release to service for the complete aircraft after the completion of all such maintenance. The basis for this certification is that the maintenance has been carried out by competent mechanics and category B1, B2 and B3 support staff, as appropriate, have signed for the maintenance tasks under their respective specialization. The principal function of the category C certifying staff is to ensure that all required maintenance has been called up and signed off by the category B1, B2 and B3 support staff, as appropriate, before issue of the certificate of release to service. Only category C personnel who also hold category B1, B2 or B3 qualifications may perform both roles in base maintenance.

REQUIREMENTS FOR EXERCISING PRIVILEGES

The holder of an aircraft maintenance license may not exercise its privileges unless:

a. In compliance with the applicable requirements of Annex I (Part-M) and Annex II (Part-145); and
b. In the preceding tqo year period he/she has, either had six months of maintenance experience in accordance with the privileges granted by the aircraft maintenance license or, met the provision for the issue of the appropriate privileges; and
c. He/she has the adequate competence to certify maintenance on the corresponding aircraft; and
d. He/she is able to read, write and communicate to an understandable level in the language(s) in which the technical documentation and procedures necessary to support the issue of the certificate of release to service are written.

DEFINITIONS FOR EXERCISING PRIVILEGES

The following definitions apply: (GM.66.20)

Electrical system: the aircraft electrical power supply source, plus the distribution system to the different components contained in the aircraft and relevant connectors. Lighting systems are also included in this definition. When working on cables and connectors which are part of these electrical systems, the following typical practices are included in the privileges:

- Continuity, insulation and bonding techniques and testing.

- Crimping and testing of crimped joints.
- Connector pin removal and insertion.
- Wiring protection techniques.

Avionics system: an aircraft system that transfers, processes, displays or stores analogue or digital data using data lines, data buses, coaxial cables, wireless or other data transmission medium, and includes the system's components and connectors.

Examples of avionics systems include the following:

- Autoflight
- Communication, Radar and Navigatio.
- Instruments (see NOTE below)
- In-Flight Entertainment Systems
- Integrated Modular Avionics (IMA)
- On-Board Maintenance Systems
- Information Systems
- Fly by Wire Systems
  (related to ATA27 "Flight Controls")
- Fibre Optic Control Systems

NOTE: Instruments are formally included within the privileges of the B2 license holders. However, maintenance on electromechanical and pitot-static components may also be released by a B1 license holder.

Simple test: a test described in approved maintenance data and meeting all the following criteria:

- The serviceability of the system can be verified using aircraft controls, switches, Built-in Test Equipment (BITE), Central Maintenance Computer (CMC) or external test equipment not involving special training.
- The outcome of the test is a unique go – no go indication or parameter, which can be a single value or a value within an interval tolerance. No interpretation of the test result or interdependence of different values is allowed.
- The test does not involve more than 10 actions as described in the approved maintenance data (not including those required to configure the aircraft prior to the test, i.e. jacking, flaps down, etc, or to return the aircraft to its initial configuration). Pushing a control, switch or button, and reading the corresponding outcome may be considered as a single step even if the maintenance data shows them separated.

Troubleshooting: the procedures and actions necessary, using approved maintenance data, in order to identify the root cause of a defect or malfunction. It may include the use of BITE or external test equipment.

Line maintenance: any maintenance that is carried out before flight to ensure that the aircraft is fit for the intended flight. It may include:

- Trouble shooting.
- Defect rectification.
- Component replacement with use of external test equipment, if required. Component replacement may include components such as engines and propellers.
- Scheduled maintenance and/or checks including visual inspections that will detect obvious unsatisfactory conditions/discrepancies but do not require extensive in depth inspection. It may also include internal structure, systems and power plant items which are visible through quick opening access panels/doors.
- Minor repairs and modifications which do not require extensive disassembly and can be accomplished by simple means.
- For temporary or occasional cases (Airworthiness Directives (AD's) and Service Bulletins (SB's) the quality manager may accept base maintenance tasks to be performed by a line maintenance organization provided all requirements are fulfilled. The Member State will prescribe the conditions under which these tasks may be performed.

Base maintenance: any task falling outside the criteria that are given above for line maintenance.

NOTE: Aircraft maintained in accordance with "progressive" type programs need to be individually assessed in relation to this paragraph. In principle, the decision to allow some "progressive" checks to be carried out is determined by the assessment that all tasks within the particular check can be carried out safely to the required standards at the designated line maintenance station.

BASIC KNOWLEDGE REQUIREMENTS (66.A.25)

a. An applicant for an aircraft maintenance license, or the addition of a category or subcategory to such a license, shall demonstrate by examination a level of knowledge in the appropriate subject modules in accordance with the Appendix I to Annex III (Part-66). The appropriate subject module license category chart from Appendix 1 is reproduced on the "Welcome" page at the beginning of this module. The examination shall be conducted either by a training organization appropriately approved in accordance with Annex IV (Part-147) or by the competent authority.
b. The training courses and examinations shall be passed within 10 years prior to the application for an aircraft maintenance license or the addition of a category or subcategory to such aircraft maintenance license. Should this not be the case, examination credits may however be obtained in accordance with point (c).
c. The applicant may apply to the competent authority for full or partial examination credit to the basic knowledge requirements for:
   - Basic knowledge examinations that do not meet the requirement described in point (b) above, and
   - Any other technical qualification considered by the competent authority to be equivalent to the knowledge standard of Annex III (Part-66).

   Credits shall be granted in accordance with Subpart-E of Section B of this Annex (Part-66).
d. Credits expire 10 years after they are granted to the applicant by the competent authority. The applicant may apply for new credits after expiration.

BASIC EXPERIENCE REQUIREMENTS (66.A.30)

NEW LICENSE

An applicant for an aircraft maintenance license shall have acquired:

a. For category A, subcategories B1.2 and B1.4 and category B3:
   - Three years of practical maintenance experience on operating aircraft, if the applicant has no previous relevant technical training; or
   - Two years of practical maintenance experience on operating aircraft and completion of training considered relevant by the competent authority as a skilled worker, in a technical trade; or
   - One year of practical maintenance experience on operating aircraft and completion of a basic training course approved in accordance with Annex IV (Part-147).
b. For category B2 and subcategories B1.1 and B1.3:
   - Five years of practical maintenance experience on operating aircraft if the applicant has no previous relevant technical training; or
   - Three years of practical maintenance experience on operating aircraft and completion of training considered relevant by the competent authority as a skilled worker, in a technical trade; or
   - Two years of practical maintenance experience on operating aircraft and completion of a basic training course approved in accordance with Annex IV (Part-147).
c. For category C with respect to large aircraft:
   - Three years of experience exercising category B1.1, B1.3 or B2 privileges on large aircraft or as support staff according to point 145.A.35, or, a combination of both; or
   - Five years of experience exercising category B1.2 or B1.4 privileges on large aircraft or as support staff according to point 145.A.35, or a combination of both.
d. For category C with respect to other than large aircraft:
   - Three years of experience exercising category B1 or B2 privileges on other than large aircraft or as support staff according to point 145.A.35(a), or a combination of both;
e. For category C obtained through the academic route:
   - An applicant holding an academic degree in a technical discipline, from a university or other higher educational institution recognized by the competent authority, three years of experience working in a civil aircraft maintenance environment on a representative selection of tasks directly associated with aircraft maintenance including 6 months of observation of base maintenance tasks.

LICENSE EXTENSION

An applicant for an extension to an aircraft maintenance license shall have a minimum civil aircraft maintenance experience requirement appropriate to the additional category or subcategory of license applied for as defined in Appendix IV to this Annex (Part-66). The experience shall be practical and involve a representative cross

section of maintenance tasks on aircraft. At least 1 year of the required experience shall be recent maintenance experience on aircraft of the category/subcategory for which the initial aircraft maintenance license is sought.

For subsequent category/subcategory additions to an existing aircraft maintenance license, the additional recent maintenance experience required may be less than one year, but shall be at least three months. The required experience shall be dependent upon the difference between the license category/subcategory held and applied for. Such additional experience shall be typical of the new license category/subcategory sought.

ALTERNATE EXPERIENCE

Notwithstanding paragraph (a), aircraft maintenance experience gained outside a civil aircraft maintenance environment shall be accepted when such maintenance is equivalent to that required by this Annex (Part-66) as established by the competent authority. Additional experience of civil aircraft maintenance shall, however, be required to ensure adequate understanding of the civil aircraft maintenance environment. Experience shall have been acquired within the 10 years preceding the application for an aircraft maintenance license or the addition of a category or subcategory to such a license.

CONTINUED VALIDITY OF THE AIRCRAFT MAINTENANCE LICENSE (66.A.40)

a. The aircraft maintenance license becomes invalid five years after its last issue or change, unless the holder submits his/her aircraft maintenance license to the competent authority that issued it, in order to verify that the information contained in the license is the same as that contained in the competent authority records, pursuant to point 66.B.120.
b. The holder of an aircraft maintenance license shall complete the relevant parts of EASA Form 19 (see Appendix V) and submit it with the holder's copy of the license to the competent authority that issued the original aircraft maintenance license, unless the holder works in a maintenance organization approved in accordance with Annex II (Part-145) that has a procedure in its exposition whereby such organization may submit the necessary documentation on behalf of the aircraft maintenance license holder.

Any certification privilege based upon an aircraft maintenance license becomes invalid as soon as the aircraft maintenance license is invalid. The aircraft maintenance license is only valid when issued and/or changed by the competent authority and when the holder has signed the document.

ENDORSEMENT WITH AIRCRAFT RATINGS (66.A.45)

a. In order to be entitled to exercise certification privileges on a specific aircraft type, the holder of an aircraft maintenance license needs to have his/her license endorsed with the relevant aircraft ratings.
    - For category B1, B2 or C the relevant aircraft ratings are the following:
        1. For Group 1 aircraft, the appropriate aircraft type rating.
        2. For Group 2 aircraft, the appropriate aircraft type rating, manufacturer sub-group rating or full sub-group rating.
        3. For Group 3 aircraft, the appropriate aircraft type rating or full group rating.
    - For category B3, the relevant rating is 'piston-engine non-pressurized airplanes of 2 000 kg MTOM and below.
    - For category A, no rating is required, subject to compliance with the requirements of point 145.A.35 of Annex II (Part-145).
b. The endorsement of aircraft type ratings requires the satisfactory completion of the relevant category B1, B2 or C aircraft type training.
c. In addition to the requirement of point (b), the endorsement of the first aircraft type rating within a given category/subcategory requires satisfactory completion of the corresponding on the job training, as described in Appendix III to Annex III (Part-66).
d. By derogation from points (b) and (c), for Group 2 and Group 3 aircraft, aircraft type ratings may also be granted after:
    - Satisfactory completion of the relevant category B1, B2 or C aircraft type examination described in Appendix III to this Annex (Part-66); and
    - In the case of B1 and B2 category, demonstration of practical experience on the aircraft type. In that case, the practical experience shall include a representative cross section of maintenance activities relevant to the license category.

In the case of a category C rating for a person qualified by holding an academic degree as specified in point 66.A.30(a)(5), the first relevant aircraft type examination shall be at the category B1 or B2 level.

e. For Group 2 aircraft:
   1. The endorsement of manufacturer sub-group ratings for category B1 and C license holders requires complying with the aircraft type rating requirements of at least two aircraft types from the same manufacturer which combined are representative of the applicable manufacturer sub-group.
   2. The endorsement of full sub-group ratings for category B1 and C license holders requires complying with the aircraft type rating requirements of at least three aircraft types from different manufacturers which combined are representative of the applicable sub-group.
   3. The endorsement of manufacturer sub-groups and full sub-group ratings for category B2 license holders requires demonstration of practical experience which shall include a representative cross section of maintenance activities relevant to the license category and to the applicable aircraft sub-group.

f. For Group 3 aircraft:
   1. The endorsement of the full Group 3 rating for category B1, B2 and C license holders requires demonstration of practical experience, which shall include a representative cross section of maintenance activities relevant to the license category and to the group 3.
   2. For category B1, unless the applicant provides evidence of appropriate experience, the group 3 rating shall be subject to the following limitations, which shall be endorsed on the license:
      - Pressurized airplanes.
      - Metal structure airplanes.
      - Composite structure airplanes.
      - Wooden structure airplanes.
      - Airplanes with metal tubing structure covered with fabric.

g. For the B3 license:
   1. The endorsement of the rating "piston-engine non-pressurized airplanes of 2000 kg MTOM and below" requires demonstration of practical experience which shall include a representative cross-section of maintenance activities relevant to the license category.
   2. Unless the applicant provides evidence of appropriate experience, the rating referred to in point 1 shall be subject to the following limitations, which shall be endorsed on the license:
      - Wooden structure airplanes
      - Airplanes with metal tubing structure covered with fabric
      - Metal structure airplanes
      - Composite structure airplanes.

LIMITATIONS (66.A.50)

a. Limitations introduced on an aircraft maintenance license are exclusions from the certification privileges and affect the aircraft in its entirety.

b. For limitations referred to in point 66.A.45, limitations shall be removed upon:
   - Demonstration of appropriate experience; or
   - After a satisfactory practical assessment performed by the competent authority.

c. For limitations referred to in point 66.A.70, limitations shall be removed upon satisfactory completion of examination on those modules/ subjects defined in the applicable conversion report referred to in point 66.B.300.

EVIDENCE OF QUALIFICATION (66.A.55)

Personnel exercising certification privileges as well as support staff shall produce their license, as evidence of qualification, within 24 hours upon request by an authorized person.

CONVERSION PROVISIONS (66.A.70)

a. The holder of a certifying staff qualification valid in a Member State, prior to the date of entry into force of Annex III (Part-66) shall be issued an aircraft maintenance license by the competent authority of this Member State without further examination subject to the conditions specified in Section B Subpart-D.

b. A person undergoing a certifying staff qualification process valid in a Member State, prior to the date of entry into force of Annex III (Part-66) may continue to be qualified. The holder of a certifying staff qualification gained following such process shall be issued an aircraft maintenance license by the competent authority of this Member State without further examination subject to the conditions specified in Section B Subpart-D.

c. Where necessary, the aircraft maintenance license shall contain limitations in accordance with point 66.A.50 to reflect the differences between (i) the scope of the certifying staff qualification valid in the Member State before the entry into force of this Regulation and (ii) the basic knowledge requirements and the basic examination standards laid down in Appendix I and II to this Annex (Part-66).

d. By derogation to paragraph (c) for aircraft not involved in commercial air transport other than large aircraft, the aircraft maintenance license shall contain limitations in accordance with point 66.A.50 to ensure that the certifying staff privileges valid in the Member State before the entry into force of this Regulation and the privileges of the converted Part-66 aircraft maintenance license remain the same.

PART-66.B PROCEDURES FOR COMPETENT AUTHORITIES

The procedures to be followed by Member State competent authorities is given in Section B of Part-66.

SCOPE (66.B.1)

This section establishes the procedures including the administrative requirements to be followed by the competent authorities in charge of the implementation and the enforcement of Section A of this Annex (Part-66).

BASIC KNOWLEDGE REQUIREMENTS

Knowledge levels for Category A, B1, B2, B3 and C Aircraft Maintenance License Basic knowledge for categories A, B1, B2 and B3 are indicated by knowledge levels (1, 2 or 3) against each applicable subject. Category C applicants shall meet either the category B1 or the category B2 basic knowledge levels.

Knowledge level indicators are defined on 3 levels as follows:

LEVEL 1: A familiarization with the principal elements of the subject. Objectives:

a. The applicant should be familiar with the basic elements of the subject.
b. The applicant should be able to give a simple description of the whole subject, using common words and examples.
c. The applicant should be able to use typical terms.

LEVEL 2: A general knowledge of the theoretical and practical aspects of the subject and an ability to apply that knowledge. Objectives:

a. The applicant should be able to understand the theoretical fundamentals of the subject.

To / From	A1	A2	A3	A4	B1.1	B1.2	B1.3	B1.4	B2	B3
A1	-	6 Months	6 Months	6 Months	2 Years	6 Months	2 Years	1 Year	2 Years	6 Months
A2	6 Months	-	6 Months	6 Months	2 Years	6 Months	2 Years	1 Year	2 Years	6 Months
A3	6 Months	6 Months	-	6 Months	2 Years	1 Year	2 Years	6 Months	2 Years	1 Year
A4	6 Months	6 Months	6 Months	-	2 Years	1 Year	2 Years	6 Months	2 Years	1 Year
B1.1	None	6 Months	6 Months	6 Months	-	6 Months	6 Months	6 Months	1 Year	6 Months
B1.2	6 Months	None	6 Months	6 Months	2 Years	-	2 Years	6 Months	2 Years	None
B1.3	6 Months	6 Months	None	6 Months	6 Months	6 Months	-	6 Months	1 Year	6 Months
B1.4	6 Months	6 Months	6 Months	None	2 Years	6 Months	2 Years	-	2 Years	6 Months
B2	6 Months	6 Months	6 Months	6 Months	1 Year	1 Year	1 Year	1 Year	-	1 Year
B3	6 Months	None	6 Months	6 Months	2 Years	6 Months	2 Years	1 Year	2 Years	-

Figure 2-3. Part-66C Appendix IV table showing experience requirements for license extensions.

b. The applicant should be able to give a general description of the subject using, as appropriate, typical examples.
c. The applicant should be able to use mathematical formulae in conjunction with physical laws describing the subject.
d. The applicant should be able to read and understand sketches, drawings and schematics describing the subject.
e. The applicant should be able to apply his knowledge in a practical manner using detailed procedures.

LEVEL 3: A detailed knowledge of the theoretical and practical aspects of the subject and a capacity to combine and apply the separate elements of knowledge in a logical and comprehensive manner. Objectives:

a. The applicant should know the theory of the subject and interrelationships with other subjects.
b. The applicant should be able to give a detailed description of the subject using theoretical fundamentals and specific examples.
c. The applicant should understand and be able to use mathematical formulae related to the subject.
d. The applicant should be able to read, understand and prepare sketches, simple drawings and schematics describing the subject.
e. The applicant should be able to apply his knowledge in a practical manner using manufacturer's instructions.
f. The applicant should be able to interpret results from various sources and measurements and apply corrective action where appropriate.

COMPETENT AUTHORITY (66.B.10)

a. General:
   - The Member State shall designate a competent authority with allocated responsibilities for the issuance, continuation, change, suspension or revocation of aircraft maintenance licenses.
   - This competent authority shall establish an adequate organizational structure to ensure compliance with this Annex (Part-66). 17.12.2014 L 362/91 Official Journal of the European Union EN.
b. Resources:
   - The competent authority shall be appropriately staffed to ensure the implementation of the requirements of this Annex (Part-66).
c. Procedures:
   - The competent authority shall establish documented procedures detailing how compliance with this Annex (Part-66) is accomplished. These procedures shall be reviewed and amended to ensure continued compliance.

RECORD-KEEPING (66.B.20)

a. The competent authority shall establish a system of record-keeping that allows adequate traceability of the process to issue, revalidate, change, suspend or revoke each aircraft maintenance license.
b. These records shall include for each license:
   1. The application for an aircraft maintenance license or change to that license, including all supporting documentation;
   2. A copy of the aircraft maintenance license including any changes;
   3. Copies of all relevant correspondence;
   4. Details of any exemption and enforcement actions;
   5. Any report from other competent authorities relating to the aircraft maintenance license holder;
   6. The records of examinations conducted by the competent authority;
   7. The applicable conversion report used for conversion;
   8. The applicable credit report used for crediting.
c. Records referred to in points 1 to 5 of point (b) shall be kept at least 5 years after the end of the license validity.
d. Records referred to in points 6, 7 and 8 of point (b) shall be kept for an unlimited period.

MUTUAL EXCHANGE OF INFORMATION (66.B.25)

a. In order to implement the requirement of this Regulation, the competent authorities shall participate in a mutual exchange of information in accordance with Article 15 of Regulation (EC) No 216/2008.
b. Without prejudice to the competencies of the Member States, in the case of a potential safety threat involving several Member States, the concerned competent authorities shall assist each other in carrying out the necessary oversight action.

EXEMPTIONS (66.B.30)

All exemptions granted in accordance with Article 14.4 of Regulation (EC) No 216/2008 shall be recorded and retained by the competent authority.

PROCEDURE FOR THE ISSUE OF AN AIRCRAFT MAINTENANCE LICENSE BY THE COMPETENT AUTHORITY (66.B.100)

a. On receipt of EASA Form 19 and any supporting documentation, the competent authority shall verify EASA Form 19 for completeness and ensure that the experience claimed meets the requirement of this Annex (Part-66).
b. The competent authority shall verify an applicant's examination status and/or confirm the validity of any credits to ensure that all required modules of Appendix I have been met as required by this Annex (Part- 66).
c. When having verified the identity and date of birth of the applicant and being satisfied that the applicant meets the standards of knowledge and experience required by this Annex (Part-66), the competent authority shall issue the relevant aircraft maintenance license to the applicant. The same information shall be kept on competent authority records.
d. In the case where aircraft types or groups are endorsed at the time of the issuance of the first aircraft maintenance license, the competent authority shall verify compliance with point 66.B.115.

PROCEDURE FOR THE ISSUE OF AN AIRCRAFT MAINTENANCE LICENSE VIA A MAINTENANCE ORGANIZATION APPROVED IN ACCORDANCE WITH ANNEX (PART-145) (66.B.105)

a. A maintenance organization approved in accordance with Annex II (Part-145), when authorized to carry out this activity by the competent authority, may (i) prepare the aircraft maintenance license on behalf of the competent authority or (ii) make recommendations to the competent authority regarding the application from an individual for a aircraft maintenance license so that the competent authority may prepare and issue such license.
b. Maintenance organizations referred to in point (a) shall ensure compliance with points 66.B.100 (a) and (b).
c. In all cases, the aircraft maintenance license can only be issued to the applicant by the competent authority.

PROCEDURE FOR THE CHANGE OF AN AIRCRAFT MAINTENANCE LICENSE TO INCLUDE AN ADDITIONAL BASIC CATEGORY OR SUBCATEGORY (66.B.110)

a. At the completion of the procedures specified in points 66.B.100 or 66.B.105, the competent authority shall endorse the additional basic category or subcategory on the aircraft maintenance license by stamp and signature or reissue the license.
b. The competent authority record system shall be changed accordingly.

PROCEDURE FOR THE CHANGE OF AN AIRCRAFT MAINTENANCE LICENSE TO INCLUDE AN AIRCRAFT RATING OR TO REMOVE LIMITATIONS (66.B.115)

a. On receipt of a satisfactory EASA Form 19 and any supporting documentation demonstrating compliance with the requirements of the applicable rating together with the accompanying aircraft maintenance license, the competent authority shall either:
    1. Endorse the applicant's aircraft maintenance license with the applicable aircraft rating; or
    2. Reissue the said license to include the applicable aircraft rating; or
    3. Remove the applicable limitations in accordance with point 66.A.50. The competent authority record system shall be changed accordingly.
b. In the case where the complete type training is not conducted by maintenance training organization appropriately approved in accordance with Annex IV (Part-147), the competent authority shall be satisfied that all type training requirements are complied with before the type rating is issued.
c. In the case where the On the Job Training is not required, the aircraft type rating shall be endorsed based on a Certificate of Recognition issued by a maintenance training organization approved in accordance with Annex IV (part-147).
d. In the case where the aircraft type training is not covered by a single course, the competent authority shall be satisfied prior to the type rating endorsement that the content and length of the courses fully satisfy the scope of the license category and that the interface areas have been appropriately addressed.

e. In the case of differences training, the competent authority shall be satisfied that (i) the applicant's previous qualification, supplemented by (ii) either a course approved in accordance with Annex IV (Part-147) or a course directly approved by the competent authority, are acceptable for type rating endorsement.
f. Compliance with the practical elements shall be demonstrated (i) by the provision of detailed practical training records or a logbook provided by a maintenance organization appropriately approved in accordance with Annex II (Part-145) or, where available, (ii) by a training certificate covering the practical training element issued by a maintenance training organization appropriately approved in accordance with Annex IV (part-147).
g. Aircraft type endorsement shall use the aircraft type ratings specified by the Agency.

PROCEDURE FOR THE RENEWAL OF AN AIRCRAFT MAINTENANCE LICENSE VALIDITY (66.B.120)

a. The competent authority shall compare the holder's aircraft maintenance license with the competent authority records and verify any pending revocation, suspension or change action pursuant to point 66.B.500. If the documents are identical and no action is pending pursuant to point 66.B.500, the holder's copy shall be renewed for 5 years and the file endorsed accordingly.
b. If the competent authority records are different from the aircraft maintenance license held by the license holder:
    1. The competent authority shall investigate the reasons for such differences and may choose not to renew the aircraft maintenance license.
    2. The competent authority shall inform the license holder and any known maintenance organization approved in accordance with Annex I (Part-M) Subpart-F or Annex II (Part-145) that may be directly affected of such fact.
    3. The competent authority shall, if necessary, take action in accordance with point 66.B.500 to revoke, suspend or change the license in question.

PROCEDURE FOR THE CONVERSION OF LICENSES INCLUDING GROUP RATINGS (66.B.125)

a. Individual aircraft type ratings already endorsed on the aircraft maintenance license referred to in point 4 of Article 5 shall remain on the license and shall not be converted to new ratings unless the license holder fully meets the requirements for endorsement defined in point 66.A.45 of this Annex (Part-66) for the corresponding group/sub-group ratings.
b. The conversion shall be performed in accordance with the following conversion table:
    1. For category B1 or C:
        - Helicopter piston engine, full group: converted to 'full sub-group 2c' plus the aircraft type ratings for those single piston engine helicopters which are in group 1,
        - Helicopter piston engine, manufacturer group: converted to the corresponding 'manufacturer sub- group 2c' plus the aircraft type ratings for those single piston engine helicopters of that manufacturer which are in group 1,
        - Helicopter turbine engine, full group: converted to 'full sub-group 2b' plus the aircraft type ratings for those single turbine engine helicopters which are in group 1,
        - Helicopter turbine engine, manufacturer group: converted to the corresponding 'manufacturer sub- group 2b' plus the aircraft type ratings for those single turbine engine helicopters of that manufacturer which are in group 1,
        - Aeroplane single piston engine — metal structure, either full group or manufacturer group: converted to 'full group 3'. For the B1 license the following limitations shall be included: composite structure aeroplanes, wooden structure aeroplanes and metal tubing and fabric aeroplanes,
        - Aeroplane multiple piston engines — metal structure, either full group or manufacturer group: converted to 'full group 3'. For the B1 license the following limitations shall be included: composite structure aeroplanes, wooden structure aeroplanes and metal tubing and fabric aeroplanes,
        - Aeroplane single piston engine — wooden structure, either full group or manufacturer group: converted to 'full group 3'. For the

B1 license the following limitations shall be included: metal structure aeroplanes, composite structure aeroplanes and metal tubing and fabric aeroplanes,

- Aeroplane multiple piston engine — wooden structure, either full group or manufacturer group: converted to 'full group 3'. For the B1 license the following limitations shall be included: metal structure aeroplanes, composite structure aeroplanes and metal tubing and fabric aeroplanes,
- Aeroplane single piston engine — composite structure, either full group or manufacturer group: converted to 'full group 3'. For the B1 license the following limitations shall be included: metal structure aeroplanes, wooden structure aeroplanes and metal tubing and fabric aeroplanes,
- Aeroplane multiple piston engine — composite structure, either full group or manufacturer group: converted to 'full group 3'. For the B1 license the following limitations shall be included: metal structure aeroplanes, wooden structure aeroplanes and metal tubing and fabric aeroplanes,
- Aeroplane turbine — single engine, full group: converted to 'full sub-group 2a' plus the aircraft type ratings for those single turboprop aeroplanes which did not require an aircraft type rating in the previous system and are in group 1,
- Aeroplane turbine — single engine, manufacturer group: converted to the corresponding 'manufacturer sub-group 2a' plus the aircraft type ratings for those single turboprop aeroplanes of that manufacturer which did not require an aircraft type rating in the previous system and are in group 1,
- Aeroplane turbine — multiple engine, full group: converted to the aircraft type ratings for those multiple turboprop aeroplanes which did not require an aircraft type rating in the previous system;

2. For category B2:
   - Aeroplane: converted to 'full sub-group 2a' and 'full group 3', plus the aircraft type ratings for those aeroplanes which did not require an aircraft type rating in the previous system and are in group 1,
   - Helicopter: converted to 'full sub-groups 2b and 2c', plus the aircraft type ratings for those helicopters which did not require an aircraft type rating in the previous system and are in group 1;
3. For category C:
   - Aeroplane: converted to 'full sub-group 2a' and 'full group 3', plus the aircraft type ratings for those aeroplanes which did not require an aircraft type rating in the previous system and are in group 1;
   - Helicopter: converted to 'full sub-groups 2b and 2c', plus the aircraft type ratings for those helicopters which did not require an aircraft type rating in the previous system and are in group 1.

c. If the license was subject to limitations following the conversion process referred to in point 66.A.70, these limitations shall remain on the license, unless they are removed under the conditions defined in the relevant conversion report referred to in point 66.B.300.

PROCEDURE FOR THE DIRECT APPROVAL OF AIRCRAFT TYPE TRAINING (66.B.130)

The competent authority may approve aircraft type training not conducted by a maintenance training organization approved in accordance with Annex IV (Part-147), pursuant to point one of Appendix III to this Annex (part-66). In such case the competent authority shall have a procedure to ensure the aircraft type training complies with Appendix III of this Annex (Part-66).

INFORMATION IN PART-66 APPENDICES

A few other areas of concern to the EASA aircraft maintenance professional are located in the Part-66 Appendices. Basic examination standards are listed in Appendix II. This includes the number of questions per each module examination and the time allotted to take each exam. Appendix III defines the aircraft type training requirements and the associated examination standards.

Appendix IV specifies experience requirements for Part-66 license extensions. ***Figure 2-3*** is taken from Appendix IV. It shows the experience requirements for adding a new category or subcategory to an existing Part-66 license. The experience shall be practical maintenance experience on operating aircraft in the subcategory relevant to the application. Note that the experience requirement will be reduced by 50 % if the applicant has completed an approved Part-147 course relevant to the subcategory.

Question: 2-1
The implementation of EASA Part-66 regulations (Annex III of the EC 1321/2014) is directly linked to EASA Part _____ requirements.

Question: 2-2
The license categories A1 and B1.1 permit the holder to issue certificates for release to service which kind of aircraft?

Question: 2-3
The holder of an aircraft maintenance license may not exercise its privileges unless,in the preceding 2-year period, he/she has had _____ months of maintenance experience in accordance with the privileges granted by the aircraft maintenance license.

Question: 2-4
Instruments are formally included within the privileges of the B2 license holders. However, maintenance on electromechanical and pitotstatic components may also be released by a _____ license holder.

Question: 2-5
Practical experience requirements are _____ for those that complete a basic training course approved in accordance with Part-147.

Question: 2-6
Personnel exercising certification privileges as well as support staff shall produce their license, as evidence of qualification, within _____ hours upon request by an authorized person.

Question: 2-7
Section B of Part 66 deals with procedure for _____ _____.

ANSWERS

Answer: 2-1
145.

Answer: 2-2
Airplanes turbine.

Answer: 2-3
6.

Answer: 2-4
B1.

Answer: 2-5
lower.

Answer: 2-6
24.

Answer: 2-7
competent authorities.

PART-66 SYLLABUS **LEVELS**

CERTIFICATION CATEGORY →	B1	B2
Sub-Module 03 APPROVED MAINTENANCE ORGANIZATIONS Knowledge Requirements		
10.3 - Approved Maintenance Organizations Detailed understanding of Part-145 and Part-M Subpart F.	2	2

Level 2
A general knowledge of the theoretical and practical aspects of the subject and an ability to apply that knowledge.

Objectives:

(a) The applicant should be able to understand the theoretical fundamentals of the subject.
(b) The applicant should be able to give a general description of the subject using, as appropriate, typical examples.
(c) The applicant should be able to use mathematical formula in conjunction with physical laws describing the subject.
(d) The applicant should be able to read and understand sketches, drawings and schematics describing the subject.
(e) The applicant should be able to apply his knowledge in a practical manner using detailed procedures.

INTRODUCTION

An aircraft can be used for commercial transport when operated by an approved Air Operations operator whose maintenance is performed by an approved Part 145 organization and certificates of release to service (CRS's) are issued by approved Part-66 certifying staff. Airlines or air transport operators, are approved to operate a fleet of aircraft. The maintenance on the fleet is performed either in-house or by an external organization.

PART 145

The European Regulations in Part 145 related to maintenance organizations highlight the following main features:

1. There is a clear distinction between the responsibilities of a maintenance organization (Part 145) and an operator (Air Operations).
2. A maintenance organization must create and file with EASA a Maintenance Organization Exposition (M.O.E) that contains information specifying the scope of work performed and that shows how the organization intends to comply with this Part.
3. The crucial role of quality assurance to guarantee, with respect to the Authority, conformity with EASA requirements in accordance with the M.O.E.
4. The importance of the CRS (Certificate of Release to Service) which is a transfer of the aircraft from the maintenance organization to the operators.

PART 145 – MAINTENANCE ORGANIZATION REQUIREMENTS

The EASA Part 145 Regulation establishes common technical requirements and administrative procedures for ensuring the continuing airworthiness of aircraft, including any component for installation thereto, which are:

- Registered in a Member State; or
- Registered in a third country and used by an operator for which a Member State ensures oversight of operations.

GENERAL (145.1)

For the purpose of this Part, the competent authority shall be:

1. For organizations having their principal place of business in a Member State, the authority designated by that Member State, or;
2. For organizations having their principal place of business located in a third country, the Agency

DEFINITIONS (145.A.5)

Within the scope of the basic Regulation, the following definitions shall apply:

- ***Aeroplane/Airplane:*** an engine-driven fixed-wing aircraft heavier than air that is supported in flight by the dynamic reaction of the air against its wings.
- ***Aircraft:*** any machine that can derive support in the atmosphere from the reactions of the air other than reactions of the air against the earth's surface.
- ***Airframe:*** the fuselage, booms, nacelles, cowlings, fairings, airfoil surfaces (including rotors but excluding propellers and rotating airfoils of engines), and landing gear of an aircraft and their accessories and controls.
- ***Certifying staff:*** personnel responsible for the release of an aircraft or a component after maintenance.
- ***Component:*** any engine, propeller, part or appliance.
- ***Continuing airworthiness:*** all of the processes ensuring that, at any time in its operating life, the aircraft complies with the airworthiness requirements in force and is in a condition for safe operation.
- ***Helicopter:*** a rotorcraft that, for its horizontal motion, depends principally on its engine-driven rotors.
- ***EASA:*** "European Aviation Safety Agency"
- ***Large Aircraft:*** an aircraft, classified as an aero plane with a maximum takeoff mass of more than 5700 kg, or a multi-engine helicopter.
- ***Maintenance:*** any one or combination of overhaul, repair, inspection, replacement, modification or defect rectification of an aircraft or component, with the exception of pre-flight inspection.

- ***Organization:*** a natural person, a legal person or part of a legal person. Such an organization may be established at more than one location whether or not within the territory of the Member States.
- ***Pre-flight inspection:*** the inspection carried out before flight to ensure that the aircraft is fit for the intended flight.
- ***Propeller:*** a complete propeller including all parts attached to and rotating with the hub and blades, and all equipment required for the control and operation of the propeller.

SCOPE (145.A.10)

This section establishes the requirements to be met by an organization to qualify for the issue or continuation of an approval for the maintenance of aircraft and components.

APPLICATION (145.A.15)

An application for the issue or change of an approval shall be made to the competent authority in a form and manner established by such authority.

TERMS OF APPROVAL (145.A.20)

The organization shall specify the scope of work deemed to constitute approval in its exposition (Appendix IV to Annex I (Part-M) contains a table of all classes and ratings).

FACILITY REQUIREMENTS (145.A.25)

The organization shall ensure that:

a. Facilities are provided appropriate for all planned work, ensuring in particular, protection from the weather elements. Specialized workshops and bays are segregated as appropriate, to ensure that environmental and work area contamination is unlikely to occur.
    1. For base maintenance of aircraft, aircraft hangars are both available and large enough to accommodate aircraft on planned base maintenance;
    2. For component maintenance, component workshops are large enough to accommodate the components on planned maintenance.

b. Office accommodation is provided for the management of the planned work referred to in point (a), and certifying staff so that they can carry out their designated tasks in a manner that contributes to good aircraft maintenance standards.

c. The working environment including aircraft hangars, component workshops and office accommodation is appropriate for the task carried out and in particular special requirements observed. Unless otherwise dictated by the particular task environment, the working environment must be such that the effectiveness of personnel is not impaired:
    1. Temperatures must be maintained such that personnel can carry out required tasks without undue discomfort.
    2. Dust and any other airborne contamination are kept to a minimum and not be permitted to reach a level in the work task area where visible aircraft/ component surface contamination is evident. Where dust/other airborne contamination results in visible surface contamination, all susceptible systems are sealed until acceptable conditions are re-established.
    3. Lighting is such as to ensure each inspection and maintenance task can be carried out in an effective manner.
    4. Noise shall not distract personnel from carrying out inspection tasks. Where it is impractical to control the noise source, such personnel are provided with the necessary personal equipment to stop excessive noise causing distraction during inspection tasks. 17.12.2014 L 362/66 Official Journal of the European Union EN.
    5. Where a particular maintenance task requires the application of specific environmental conditions different to the foregoing, then such conditions are observed. Specific conditions are identified in the maintenance data.
    6. The working environment for line maintenance is such that the particular maintenance or inspection task can be carried out without undue distraction. Therefore where the working environment deteriorates to an unacceptable level in respect of temperature, moisture, hail, ice, snow, wind, light, dust/ other airborne contamination, the particular maintenance or inspection tasks must be suspended until satisfactory conditions are re-established.

d. Secure storage facilities are provided for components, equipment, tools and material. Storage conditions ensure segregation of serviceable components and material from unserviceable aircraft components, material, equipment and tools. The conditions of storage are in accordance with the manufacturer's instructions to prevent deterioration and damage of stored items. Access to storage facilities is restricted to authorized personnel.

PERSONNEL REQUIREMENTS (145.A.30)

Part 145 specifies the role of a few key positions in the maintenance organization management hierarchy. A chart illustrating these positions is given in ***Figure 3-1***.

a. The organization shall appoint an accountable manager who has corporate authority for ensuring that all maintenance required by the customer can be financed and carried out to the standard required by this Part. The accountable manager shall:
   1. Ensure that all necessary resources are available to accomplish maintenance in accordance with point 145.A.65(b) to support the organization approval.
   2. Establish and promote the safety and quality policy specified in point 145.A.65(a).
   3. Demonstrate a basic understanding of this Annex (Part-145).

b. The organization shall nominate a person or group of persons, whose responsibilities include ensuring that the organization complies with this Part. Such person(s) shall ultimately be responsible to the accountable manager.
   1. The person or persons nominated shall represent the maintenance management structure of the organization and be responsible for all functions specified in this Part.
   2. The person or persons nominated shall be identified and their credentials submitted in a form and manner established by the competent authority.
   3. The person or persons nominated shall be able to demonstrate relevant knowledge, background and satisfactory experience related to aircraft or component maintenance and demonstrate a working knowledge of this Part.
   4. Procedures shall make clear who deputises for any particular person in the case of lengthy absence of the said person.

c. The accountable manager under point (a) shall appoint a person with responsibility for monitoring the quality system, including the associated feedback system as required by point 145.A.65(c). The appointed person shall have direct access to the accountable manager to ensure that the accountable manager is kept properly informed on quality and compliance matters.

d. The organization shall have a maintenance man-hour plan showing that the organization has sufficient staff to plan, perform, supervise, inspect and quality monitor the organization in accordance with the approval. In addition the organization shall have a procedure to reassess work intended to be carried out when actual staff availability is less than the planned staffing level for any particular work shift or period.

e. The organization shall establish and control the competence of personnel involved in any maintenance, management and/or quality audits in accordance with a procedure and to a standard agreed by the competent authority. In addition to the necessary expertise related to the job function, competence must include an understanding of the application of human factors and human performance issues appropriate to that person's function in the organization. 'Human factors' means principles which apply to aeronautical design, certification, training, operations and maintenance and which seek safe interface between the human and other system components by proper consideration of human performance. 'Human performance' means human capabilities and limitations which have an impact on the safety and efficiency of aeronautical operations. 17.12.2014 L 362/67 Official Journal of the European Union EN.

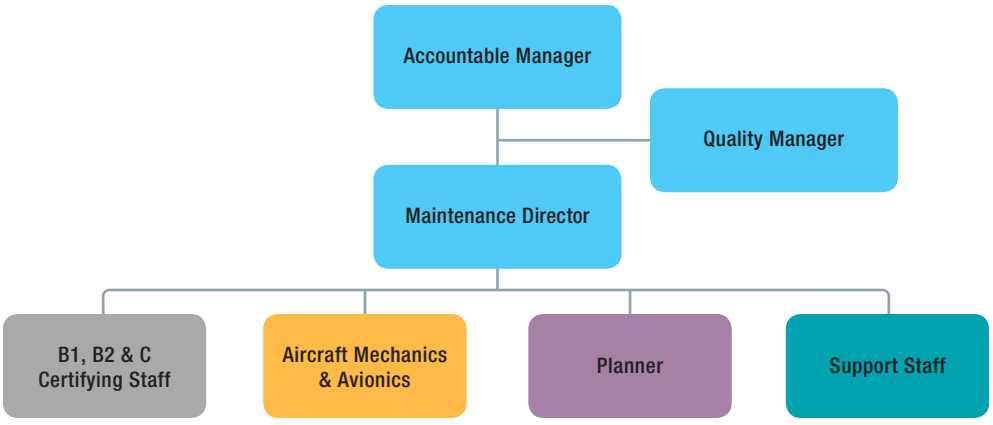


Figure 3-1. Management structure required for Part 145 maintenance operations.

f. The organization shall ensure that personnel who carry out and/or control a continued airworthiness non-destructive test of aircraft structures and/or components are appropriately qualified for the particular non-destructive test in accordance with the European or equivalent Standard recognised by the Agency. Personnel who carry out any other specialised task shall be appropriately qualified in accordance with officially recognised Standards. By derogation to this point those personnel specified in points (g) and (h)(1) and (h)(2), qualified in category B1 or B3 in accordance with Annex III (Part-66) may carry out and/or control colour contrast dye penetrant tests.

g. Any organization maintaining aircraft, except where stated otherwise in point (j), shall in the case of aircraft line maintenance, have appropriate aircraft rated certifying staff qualified as category B1, B2, B3, as appropriate, in accordance with Annex III (Part-66) and point 145.A.35.

In addition such organizations may also use appropriately task trained certifying staff holding the privileges described in points 66.A.20(a)(1) and 66.A.20(a)(3)(ii) and qualified in accordance with Annex III (Part-66) and point 145.A.35 to carry out minor scheduled line maintenance and simple defect rectification. The availability of such certifying staff shall not replace the need for category B1, B2, B3 certifying staff, as appropriate.

h. Any organization maintaining aircraft, except where stated otherwise in point (j) shall:
   1. In the case of base maintenance of large aircraft, have appropriate aircraft type rated certifying staff qualified as category C in accordance with Part-66 and point 145.A.35. In addition the organization shall have sufficient aircraft type rated staff qualified as category B1, B2 as appropriate in accordance with Part-66 and point 145.A.35 to support the category C certifying staff.
      i. B1 and B2 support staff shall ensure that all relevant tasks or inspections have been carried out to the required standard before the category C certifying staff issues the certificate of release to service.
      ii. The organization shall maintain a register of any such B1 and B2 support staff.
      iii. The category C certifying staff shall ensure that compliance with point (i) has been met and that all work required by the customer has been accomplished during the particular base maintenance check or work package, and shall also assess the impact of any work not carried out with a view to either requiring its accomplishment or agreeing with the operator to defer such work to another specified check or time limit.
   2. In the case of base maintenance of aircraft other than large aircraft have either:
      i. Appropriate aircraft rated certifying staff qualified as category B1, B2, B3, as appropriate, in accordance with Annex III (Part-66) and point 145.A.35; or
      ii. Appropriate aircraft rated certifying staff qualified in category C assisted by support staff as specified in point 145.A.35(a)(i).

i. Component certifying staff shall comply with Annex III (Part-66).

j. By derogation to points (g) and (h), in relation to the obligation to comply with Annex III (Part-66), the organization may use certifying staff qualified in accordance with the following provisions:
   1. For organization facilities located outside the Community territory certifying staff may be qualified in accordance with the national aviation regulations of the State in which the organization facility is registered subject to the conditions specified in Appendix IV to this Part.
   2. For line maintenance carried out at a line station of an organization which is located outside the Community territory, the certifying staff may be qualified in accordance with the national aviation regulations of the State in which the line station is based, subject to the conditions specified in Appendix IV to this Part. 17.12.2014 L 362/68 Official Journal of the European Union EN
   3. For a repetitive pre-flight airworthiness directive which specifically states that the flight crew may carry out such airworthiness directive, the organization may issue a limited certification authorization to the aircraft commander and/or the flight engineer on the basis of the flight crew license held. However, the organization shall ensure that sufficient practical training has been carried out to ensure that such aircraft commander or flight engineer can accomplish the airworthiness directive to the required standard.
   4. In the case of aircraft operating away from a supported location the organization may

issue a limited certification authorization to the commander and/or the flight engineer on the basis of the flight crew license held subject to being satisfied that sufficient practical training has been carried out to ensure that the commander or flight engineer can accomplish the specified task to the required standard. The provisions of this point shall be detailed in an exposition procedure.

5. In the following unforeseen cases, where an aircraft is grounded at a location other than the main base where no appropriate certifying staff are available, the organization contracted to provide maintenance support may issue a one-off certification authorization:
   i. to one of its employees holding equivalent type authorizations on aircraft of similar technology, construction and systems; or
   ii. to any person with not less than five years maintenance experience and holding a valid ICAO aircraft maintenance license rated for the aircraft type requiring certification provided there is no organization appropriately approved under this Part at that location and the contracted organization obtains and holds on file evidence of the experience and the license of that person.

All such cases as specified in this point shall be reported to the competent authority within seven days of the issuance of such certification authorization. The organization issuing the one-off authorization shall ensure that any such maintenance that could affect flight safety is rechecked by an appropriately approved organization.

CERTIFYING STAFF AND CATEGORY B1 AND B2 SUPPORT STAFF (145.A.35)

a. In addition to the appropriate requirements of points 145.A.30(g) and (h), the organization ***(Figure 3-2)*** shall ensure that certifying staff and support staff have an adequate understanding of the relevant aircraft and/or components to be maintained together with the associated organization procedures. In the case of certifying staff, this shall be accomplished before the issue or re-issue of the certification authorization.
   i. 'Support staff' means those staff holding an aircraft maintenance license under Annex III (Part-66) in category B1, B2 and/or B3 with the appropriate aircraft ratings, working in a base maintenance environment while not necessarily holding certification privileges.
   ii. 'Relevant aircraft and/or components', means those aircraft or components specified in the particular certification authorization.
   iii. Certification authorization' means the authorization issued to certifying staff by the organization and which specifies the fact that they may sign certificates of release to service within the limitations stated in such authorization on behalf of the approved organization

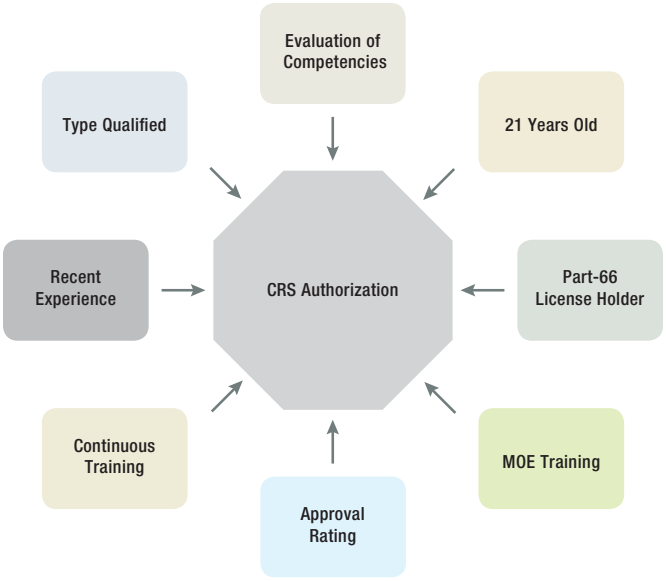


Figure 3-2. Quality system responsibilities.

b. Excepting those cases listed in points 145.A.30(j) and 66.A.20(a)3(ii) the organization may only issue a certification authorization to certifying staff in relation to the basic categories or subcategories and any type rating listed on the aircraft maintenance license as required by Annex III (Part-66), subject to the license remaining valid throughout the validity period of the authorization and the certifying staff remaining in compliance with Annex III (Part-66).
c. The organization shall ensure that all certifying staff and support staff are involved in at least six months of actual relevant aircraft or component maintenance experience in any consecutive two year period. For the purpose of this point 'involved in actual relevant aircraft or component maintenance' means that the person has worked in an aircraft or component maintenance environment and has

either exercised the privileges of the certification authorization and/or has actually carried out maintenance on at least some of the aircraft type or aircraft group systems specified in the particular certification authorization. 17.12.2014 L 362/69 Official Journal of the European Union EN

d. The organization shall ensure that all certifying staff and support staff receive sufficient continuation training in each two year period to ensure that such staff have up to date knowledge of relevant technology, organization procedures and human factor issues.

e. The organization shall establish a programme for continuation training for certifying staff and support staff, including a procedure to ensure compliance with the relevant points of 145.A.35 as the basis for issuing certification authorizations under this Part to certifying staff, and a procedure to ensure compliance with Annex III (Part-66).

f. Except where any of the unforeseen cases of point 145.A.30(j)(5) apply, the organization shall assess all prospective certifying staff for their competence, qualification and capability to carry out their intended certifying duties in accordance with a procedure as specified in the exposition prior to the issue or reissue of a certification authorization under this Part.

g. When the conditions of points (a), (b), (d), (f) and, where applicable, point (c) have been fulfilled by the certifying staff, the organization shall issue a certification authorization that clearly specifies the scope and limits of such authorization. Continued validity of the certification authorization is dependent upon continued compliance with points (a), (b), (d), and where applicable, (c).

h. The certification authorization must be in a style that makes its scope clear to the certifying staff and any authorized person who may require to examine the authorization. Where codes are used to define scope, the organization shall make a code translation readily available. 'Authorized person' means the officials of the competent authorities, the Agency and the Member State who has responsibility for the oversight of the maintained aircraft or component.

i. The person responsible for the quality system shall also remain responsible on behalf of the organization for issuing certification authorizations to certifying staff. Such person may nominate other persons to actually issue or revoke the certification authorizations in accordance with a procedure as specified in the exposition.

j. The organization shall maintain a record of all certifying staff and support staff, which shall contain:
   1. The details of any aircraft maintenance license held under Annex III (Part-66); and
   2. All relevant training completed; and
   3. The scope of the certification authorizations issued, where relevant; and
   4. Particulars of staff with limited or one-off certification authorizations. The organization shall retain the record for at least three years after the staff referred to in this point have ceased employment with the organization or as soon as the authorization has been withdrawn. In addition, upon request, the maintenance organization shall furnish the staff referred to in this point with a copy of their personal record on leaving the organization. The staff referred to in this point shall be given access on request to their personal records as detailed above.

k. The organization shall provide certifying staff with a copy of their certification authorization in either a documented or electronic format.

l. Certifying staff shall produce their certification authorization to any authorized person within 24 hours.

m. The minimum age for certifying staff and support staff is 21 years.

n. The holder of a category A aircraft maintenance license may only exercise certification privileges on a specific aircraft type following the satisfactory completion of the relevant category A aircraft task training carried out by an organization appropriately approved in accordance with Annex II (Part-145) or Annex IV (Part-147). This training shall include practical hands on training and theoretical training as appropriate for each task authorized. Satisfactory completion of training shall be demonstrated by an examination or by workplace assessment carried out by the organization. 17.12.2014 L 362/70 Official Journal of the European Union EN

o. The holder of a category B2 aircraft maintenance license may only exercise the certification privileges described in point 66.A.20(a)(3)(ii) of Annex III (Part-66) following the satisfactory completion of (i) the relevant category A aircraft task training and (ii) 6 months of documented practical experience

covering the scope of the authorization that will be issued. The task training shall include practical hands on training and theoretical training as appropriate for each task authorized. Satisfactory completion of training shall be demonstrated by an examination or by workplace assessment. Task training and examination/assessment shall be carried out by the maintenance organization issuing the certifying staff authorization. The practical experience shall be also obtained within such maintenance organization.

EQUIPMENT, TOOLS AND MATERIAL (145.A.40)

a. The organization shall have available and use the necessary equipment, tools and material to perform the approved scope of work.
   1. Where the manufacturer specifies a particular tool or equipment, the organization shall use that tool or equipment, unless the use of alternative tooling or equipment is agreed by the competent authority via procedures specified in the exposition.
   2. Equipment and tools must be permanently available, except in the case of any tool or equipment that is so infrequently used that its permanent availability is not necessary. Such cases shall be detailed in an exposition procedure.
   3. An organization approved for base maintenance shall have sufficient aircraft access equipment and inspection platforms/docking such that the aircraft can be properly inspected.

b. The organization shall ensure that all tools, equipment and particularly test equipment, as appropriate, are controlled and calibrated according to an officially recognized standard at a frequency to ensure serviceability and accuracy. Records of such calibrations and traceability to the standard used shall be kept by the organization. (***Figure 3-3***)

ACCEPTANCE OF COMPONENTS (145.A.42)

a. All components shall be classified and appropriately segregated into the following categories:
   1. Components which are in a satisfactory condition, released on an EASA Form 1 or equivalent and marked in accordance with Subpart-Q of Annex I (Part-21) to Regulation (EU) No 748/2012.

Figure 3-3. The necessary equipment and tools must be permanently available.

   2. Unserviceable components which shall be maintained in accordance with this section.
   3. Unsalvageable components which are classified in accordance with point 145.A.42(d).
   4. Standard parts used on an aircraft, engine, propeller or other aircraft component when specified in the manufacturer's illustrated parts catalogue and/or the maintenance data.
   5. Material both raw and consumable used in the course of maintenance when the organization is satisfied that the material meets the required specification and has appropriate traceability. All material must be accompanied by documentation clearly relating to the particular material and containing a conformity to specification statement plus both the manufacturing and supplier source.
   6. Components referred to in point 21A.307(c) of Annex I (Part-21) to Regulation (EU) No 748/2012.

b. Prior to installation of a component, the organization shall ensure that the particular component is eligible to be fitted when different modification and/or airworthiness directive standards may be applicable.

c. The organization may fabricate a restricted range of parts to be used in the course of undergoing work within its own facilities provided procedures are identified in the exposition.

d. Components which have reached their certified life limit or contain a non-repairable defect shall be classified as unsalvageable and shall not be

permitted to re-enter the component supply system unless certified life limits have been extended or a repair solution has been approved according to Annex I (Part-21) to Regulation (EU) No 748/2012.

e. Components referred to in point 21A.307(c) of Annex I (Part-21) to Regulation (EU) No 748/2012 shall only be installed if considered eligible for installation by the aircraft owner in its own aircraft.

MAINTENANCE DATA (145.A.45)

a. The organization shall hold and use applicable current maintenance data in the performance of maintenance, including modifications and repairs. 'Applicable' means relevant to any aircraft, component or process specified in the organization's approval class rating schedule and in any associated capability list. In the case of maintenance data provided by an operator or customer, the organization shall hold such data when the work is in progress, with the exception of the need to comply with point 145.A.55(c).

b. For the purposes of this Part, applicable maintenance data shall be any of the following:
   1. Any applicable requirement, procedure, operational directive or information issued by the authority responsible for the oversight of the aircraft or component;
   2. Any applicable airworthiness directive issued by the authority responsible for the oversight of the aircraft or component;
   3. Instructions for continuing airworthiness, issued by type certificate holders, supplementary type certificate holders, any other organization required to publish such data by Annex I (Part-21) to Regulation (EU) No 748/2012 and in the case of aircraft or components from third countries the airworthiness data mandated by the authority responsible for the oversight of the aircraft or component;
   4. Any applicable standard, such as but not limited to, maintenance standard practices recognised by the Agency as a good standard for maintenance;
   5. Any applicable data issued in accordance with point (d).

c. The organization shall establish procedures to ensure that if found, any inaccurate, incomplete or ambiguous procedure, practice, information or maintenance instruction contained in the maintenance data used by maintenance personnel is recorded and notified to the author of the maintenance data.

d. The organization may only modify maintenance instructions in accordance with a procedure specified in the maintenance organization's exposition. With respect to those changes, the organization shall demonstrate that they result in equivalent or improved maintenance standards and shall inform the type-certificate holder of such changes. Maintenance instructions for the purposes of this point means instructions on how to carry out the particular maintenance task: they exclude the engineering design of repairs and modifications.

e. The organization shall provide a common work card or worksheet system to be used throughout relevant parts of the organization. In addition, the organization shall either transcribe accurately the maintenance data contained in points (b) and (d) onto such work cards or worksheets or make precise reference to the particular maintenance task or tasks contained in such maintenance data. Work cards and worksheets may be computer generated and held on an electronic database subject to both adequate safeguards against unauthorized alteration and a back-up electronic database which shall be updated within 24 hours of any entry made to the main electronic database. Complex maintenance tasks shall be transcribed onto the work cards or worksheets and subdivided into clear stages to ensure a record of the accomplishment of the complete maintenance task.

Where the organization provides a maintenance service to an aircraft operator who requires their work card or worksheet system to be used then such work card or worksheet system may be used. In this case, the organization shall establish a procedure to ensure correct completion of the aircraft operators' work cards or worksheets. (***Figure 3-4***)

f. The organization shall ensure that all applicable maintenance data is readily available for use when required by maintenance personnel.

g. The organization shall establish a procedure to ensure that maintenance data it controls is kept up to date. In the case of operator/customer controlled and provided maintenance data, the organization shall be able to show that either it has written confirmation from the operator/customer that all such maintenance data is up to date or it has work orders specifying the amendment status of the maintenance data to be used or it can show that it is on the operator/customer maintenance data amendment list.

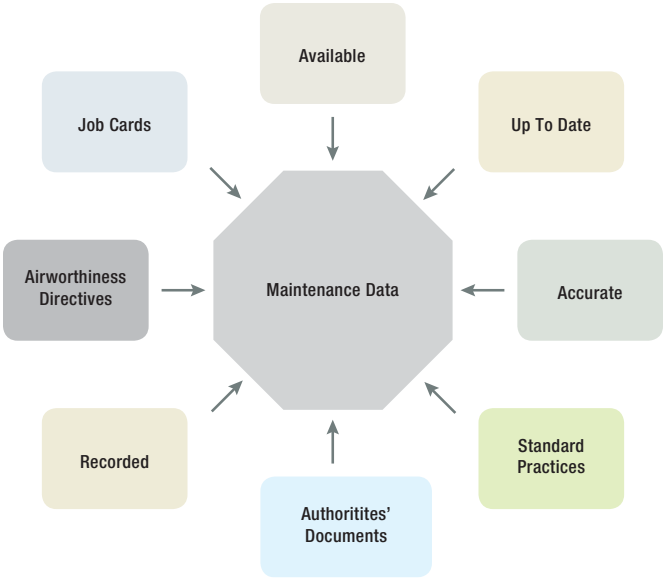


Figure 3-4. Types of maintenance documentation comprising maintenance data.

PRODUCTION PLANNING (145.A.47)

a. The organization shall have a system appropriate to the amount and complexity of work to plan the availability of all necessary personnel, tools, equipment, material, maintenance data and facilities in order to ensure the safe completion of the maintenance work.
b. The planning of maintenance tasks, and the organising of shifts, shall take into account human performance limitations.
c. When it is required to hand over the continuation or completion of maintenance tasks for reasons of a shift or personnel changeover, relevant information shall be adequately communicated between outgoing and incoming personnel.

CERTIFICATION OF MAINTENANCE (145.A.50)

a. A certificate of release to service shall be issued by appropriately authorized certifying staff on behalf of the organization when it has been verified that all maintenance ordered has been properly carried out by the organization in accordance with the procedures specified in point 145.A.70, taking into account the availability and use of the maintenance data specified in point 145.A.45 and that there are no non-compliances which are known to endanger flight safety.
b. A certificate of release to service shall be issued before flight at the completion of any maintenance.
c. New defects or incomplete maintenance work orders identified during the above maintenance shall be brought to the attention of the aircraft operator for the specific purpose of obtaining agreement to rectify such defects or completing the missing elements of the maintenance work order. In the case where the aircraft operator declines to have such maintenance carried out under this point, point (e) is applicable.
d. A certificate of release to service shall be issued at the completion of any maintenance on a component whilst off the aircraft. The authorized release certificate 'EASA Form 1' referred to in Appendix II of Annex I (Part-M) constitutes the component certificate of release to service except if otherwise specified in point M.A.502(b) or M.A.502(e). When an organization maintains a component for its own use, an EASA Form 1 may not be necessary depending upon the organization's internal release procedures defined in the exposition.
e. By derogation to point (a), when the organization is unable to complete all maintenance ordered, it may issue a certificate of release to service within the approved aircraft limitations. The organization shall enter such fact in the aircraft certificate of release to service before the issue of such certificate.
f. By derogation to points (a) and 145.A.42, when an aircraft is grounded at a location other than the main line station or main maintenance base due to the non-availability of a component with the appropriate release certificate, it is permissible to temporarily fit a component without the appropriate release certificate for a maximum of 30 flight hours or until the aircraft first returns to the main line station or main maintenance base, whichever is the sooner, subject to the aircraft operator agreement and said component having a suitable release certificate but otherwise in compliance with all applicable maintenance and operational requirements. Such components shall be removed by the above prescribed time limit unless an appropriate release certificate has been obtained in the meantime under points (a) and 145.A.42.

MAINTENANCE RECORDS (145.A.55)

a. The organization shall record all details of maintenance work carried out. As a minimum, the organization shall retain records necessary to prove that all requirements have been met for issuance of the certificate of release to service, including subcontractor's release documents.

b. The organization shall provide a copy of each certificate of release to service to the aircraft operator, together with a copy of any specific repair/modification data used for repairs/modifications carried out.
c. The organization shall retain a copy of all detailed maintenance records and any associated maintenance data for three years from the date the aircraft or component to which the work relates was released from the organization.
    1. The records under this point shall be stored in a manner that ensures protection from damage, alteration and theft.
    2. Computer backup discs, tapes etc. shall be stored in a different location from that containing the working discs, tapes etc., in an environment that ensures they remain in good condition.
    3. Where an organization approved under this Annex (Part-145) terminates its operation, all retained maintenance records covering the last two years shall be distributed to the last owner or customer of the respective aircraft or component or shall be stored as specified by the competent authority. (***Figure 3-5***)

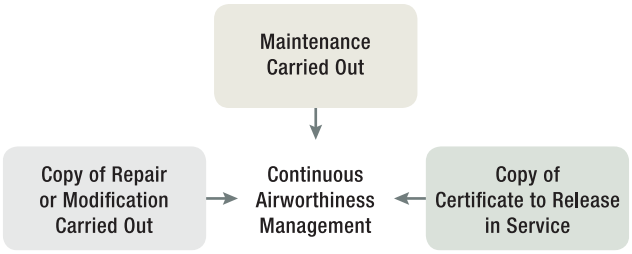


Figure 3-5. Detailed maintenance records are kept for at least two years.

OCCURRENCE REPORTING (145.A.60)

a. The organization shall report to the competent authority, the state of registry and the organization responsible for the design of the aircraft or component any condition of the aircraft or component identified by the organization that has resulted or may result in an unsafe condition that hazards seriously the flight safety.
b. The organization shall establish an internal occurrence reporting system as detailed in the exposition to enable the collection and evaluation of such reports, including the assessment and extraction of those occurrences to be reported under point (a). This procedure shall identify adverse trends, corrective actions taken or to be taken by the organization to address deficiencies and include evaluation of all known relevant information relating to such occurrences and a method to circulate the information as necessary.
c. The organization shall make such reports in a form and manner established by the Agency and ensure that they contain all pertinent information about the condition and evaluation results known to the organization.
d. Where the organization is contracted by a commercial operator to carry out maintenance, the organization shall also report to the operator any such condition affecting the operator's aircraft or component.
e. The organization shall produce and submit such reports as soon as practicable but in any case within 72 hours of the organization identifying the condition to which the report relates.

SAFETY AND QUALITY POLICY (145.A.65)

a. The organization shall establish a safety and quality policy for the organization to be included in the exposition under point 145.A.70.
b. The organization shall establish procedures agreed by the competent authority taking into account human factors and human performance to ensure good maintenance practices and compliance with this Part which shall include a clear work order or contract such that aircraft and components may be released to service in accordance with point 145.A.50.
    1. The maintenance procedures under this point apply to points 145.A.25 to 145.A.95.
    2. The maintenance procedures established or to be established by the organization under this point shall cover all aspects of carrying out the maintenance activity, including the provision and control of specialised services and lay down the standards to which the organization intends to work.
    3. With regard to aircraft line and base maintenance, the organization shall establish procedures to minimise the risk of multiple errors and capture errors on critical systems, and to ensure that no person is required to carry out and inspect in relation to a maintenance task involving some element of disassembly/reassembly of several components of the same type fitted to more than one system on the same aircraft during a particular maintenance check. However,

when only one person is available to carry out these tasks then the organization's work card or worksheet shall include an additional stage for reinspection of the work by this person after completion of all the same tasks.

4. Maintenance procedures shall be established to ensure that damage is assessed and modifications and repairs are carried out using data specified in point M.A.304.

c. The organization shall establish a quality system that includes the following:
   1. Independent audits in order to monitor compliance with required aircraft/aircraft component standards and adequacy of the procedures to ensure that such procedures invoke good maintenance practices and airworthy aircraft/aircraft components. In the smallest organizations the independent audit part of the quality system may be contracted to another organization approved under this Part or a person with appropriate technical knowledge and proven satisfactory audit experience; and
   2. A quality feedback reporting system to the person or group of persons specified in point 145.A.30(b) and ultimately to the accountable manager that ensures proper and timely corrective action is taken in response to reports resulting from the independent audits established to meet point (1).

MAINTENANCE ORGANIZATION EXPOSITION (MOE) (145.A.70)

a. Maintenance organization exposition' means the document or documents that contain the material specifying the scope of work deemed to constitute approval and showing how the organization intends to comply with this Annex (Part-145). The organization shall provide the competent authority with a maintenance organization exposition, containing the following information:
   1. A statement signed by the accountable manager confirming that the maintenance organization exposition and any referenced associated manuals define the organization's compliance with this Annex (Part-145) and will be complied with at all times. When the accountable manager is not the chief executive officer of the organization then such chief executive officer shall countersign the statement;
   2. The organization's safety and quality policy as specified by point 145.A.65;
   3. The title(s) and name(s) of the persons nominated under point 145.A.30(b);
   4. The duties and responsibilities of the persons nominated under point 145.A.30(b), including matters on which they may deal directly with the competent authority on behalf of the organization;
   5. An organization chart showing associated chains of responsibility between the persons nominated under point 145.A.30(b);
   6. A list of certifying staff and support staff;
   7. A general description of manpower resources;
   8. A general description of the facilities located at each address specified in the organization's approval certificate;
   9. A specification of the organization's scope of work relevant to the extent of approval;
   10. The notification procedure of point 145.A.85 for organization changes;
   11. The maintenance organization exposition amendment procedure;
   12. The procedures and quality system established by the organization under points 145.A.25 to 145.A.90;
   13. A list of commercial operators, where applicable, to which the organization provides an aircraft maintenance service;
   14. A list of subcontracted organizations, where applicable, as specified in point 145.A.75(b);
   15. A list of line stations, where applicable, as specified in point 145.A.75(d);
   16. A list of contracted organizations, where applicable.

b. The exposition shall be amended as necessary to remain an up to date description of the organization The exposition and any subsequent amendment shall be approved by the competent authority.

c. Notwithstanding point (b) minor amendments to the exposition may be approved through an exposition procedure (hereinafter called indirect approval).

PRIVILEGES OF THE ORGANIZATION (145.A.75)

In accordance with the exposition, the organization shall be entitled to carry out the following tasks:

a. Maintain any aircraft and/or component for which it is approved at the locations identified in the approval certificate and in the exposition;

b. Arrange for maintenance of any aircraft or component for which it is approved at another organization

that is working under the quality system of the organization. This refers to work being carried out by an organization not itself appropriately approved to carry out such maintenance under this Part and is limited to the work scope permitted under procedures laid down in point 145.A.65(b). This work scope shall not include a base maintenance check of an aircraft or a complete workshop maintenance check or overhaul of an engine or engine module;

c. Maintain any aircraft or any component for which it is approved at any location subject to the need for such maintenance arising either from the unserviceability of the aircraft or from the necessity of supporting occasional line maintenance, subject to the conditions specified in the exposition;
d. Maintain any aircraft and/or component for which it is approved at a location identified as a line maintenance location capable of supporting minor maintenance and only if the organization exposition both permits such activity and lists such locations;
e. Issue certificates of release to service in respect of completion of maintenance in accordance with point 145.A.50.

LIMITATION ON THE ORGANIZATION (145.A.80)

The organization shall only maintain an aircraft or component for which it is approved when all the necessary facilities, equipment, tooling, material, maintenance data and certifying staff are available.

CHANGES TO THE ORGANIZATION (145.A.85)

The organization shall notify the competent authority of any proposal to carry out any of the following changes before such changes take place to enable the competent authority to determine continued compliance with this Part and to amend, if necessary, the approval certificate, except that in the case of proposed changes in personnel not known to the management beforehand, these changes must be notified at the earliest opportunity: The name of the organization;

1. The main location of the organization;
2. Additional locations of the organization;
3. The accountable manager;
4. Any of the persons nominated under point 145.A.30(b);
5. The facilities, equipment, tools, material, procedures, work scope or certifying staff that could affect the approval.

CONTINUE VALIDITY (145.A.90)

a. An approval shall be issued for an unlimited duration. It shall remain valid subject to:
   1. The organization remaining in compliance with Annex II (Part-145), in accordance with the provisions related to the handling of findings as specified under point 145.B.50; and
   2. The competent authority being granted access to the organization to determine continued compliance with this Part; and
   3. The certificate not being surrendered or revoked.
b. Upon surrender or revocation, the approval shall be returned to the competent authority.

FINDINGS (145.A.95)

a. A level 1 finding is any significant non-compliance with Part-145 requirements which lowers the safety standard and hazards seriously the flight safety.
b. A level 2 finding is any non-compliance with the Part-145 requirements which could lower the safety standard and possibly hazard the flight safety.
c. After receipt of notification of findings according to 145.B.50, the holder of the maintenance organization approval shall define a corrective action plan and demonstrate corrective action to the satisfaction of the competent authority within a period agreed with this authority.

PART-M - SUBPART-F - MAINTENANCE ORGANIZATION

SCOPE (M.A.601)

This Subpart establishes the requirements to be met by an organization to qualify for the issue or continuation of an approval for the maintenance of aircraft and components not listed in point M.A.201(g).

APPLICATION (M.A.602)

An application for issue or change of a maintenance organization approval shall be made on a form and in a manner established by the competent authority.

EXTENT OF APPROVAL (M.A.603)

(a) An organization involved in activities subject to this Subpart shall not exercise its activities unless approved by the competent authority. Appendix V to Annex I (Part-M) provides the template certificate for this approval.

(b) The maintenance organization's manual referred to in point M.A.604 shall specify the scope of work deemed to constitute approval. Appendix IV to Annex I (Part-M) defines all classes and ratings possible under Subpart-F of this Annex (Part-M).

(c) An approved maintenance organization may fabricate, in conformity with maintenance data, a restricted range of parts for the use in the course of undergoing work within its own facilities, as identified in the maintenance organization manual. (***Figure 3-6***)

MAINTENANCE ORGANIZATION MANUAL (M.A.604)

a. The maintenance organization shall provide a manual containing at least the following information:

1. A statement signed by the accountable manager to confirm that the organization will continuously work in accordance with Annex I (Part-M) and the manual at all times, and;
2. The organization's scope of work, and;
3. The title(s) and name(s) of person(s) referred to in point M.A.606(b), and;
4. An organization chart showing associated chains of responsibility between the person(s) referred to in point M.A.606(b), and;
5. A list of certifying staff with their scope of approval, and;
6. A list of locations where maintenance is carried out, together with a general descriptions of the facilities, and;
7. Procedures specifying how the maintenance organization ensures compliance with this Part, and;

[MEMBER STATE*]

A Member of the European Union **

MAINTENANCE ORGANISATION APPROVAL CERTIFICATE

Reference: [MEMBER STATE CODE *].145.[XXXX]

Pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council and to Commission Regulation (EC) No 2042/2003 for the time being in force and subject to the condition specified below, the [COMPETENT AUTHORITY OF THE MEMBER STATE*] hereby certifies:

[COMPANY NAME AND ADDRESS]

as a maintenance organisation in compliance with Section A of Annex II (Part-145) of Regulation (EC) No 2042/2003, approved to maintain products, parts and appliances listed in the attached approval schedule and issue related certificates of release to service using the above references.

CONDITIONS:

1. This approval is limited to that specified in the scope of work section of the approved maintenance organisation exposition as referred to in Section A of Annex II (Part-145), and

2. This approval requires compliance with the procedures specified in the approved maintenance organisation exposition, and

3. This approval is valid whilst the approved maintenance organisation remains in compliance with Annex II (Part-145) of Regulation (EC) No 2042/2003.

4. Subject to compliance with the foregoing conditions, this approval shall remain valid for an unlimited duration unless the approval has previously been surrendered, superseded, suspended or revoked.

Date of original issue:

Date of this revision:

Revision No:

Signed:

For the competent authority: [COMPETENT AUTHORITY OF THE MEMBER STATE*]

Figure 3-6. Example maintenance organization approval certificate.

8. The maintenance organization manual amendment procedure(s).

b. The maintenance organization manual and its amendments shall be approved by the competent authority.

c. Notwithstanding point (b) minor amendments to the manual may be approved through a procedure (hereinafter called indirect approval).

FACILITIES (M.A.605)

The organization shall ensure that:

a. Facilities are provided for all planned work, specialised workshops and bays are segregated as appropriate, to ensure protection from contamination and the environment.

b. Office accommodation is provided for the management of all planned work including in particular, the completion of maintenance records.

c. Secure storage facilities are provided for components, equipment, tools and material. Storage conditions shall ensure segregation of unserviceable components and material from all other components, material, equipment and tools. Storage conditions shall be in accordance with the manufacturers' instructions and access shall be restricted to authorized personnel.

PERSONNEL REQUIREMENTS (M.A.606)

a. The organization shall appoint an accountable manager, who has corporate authority for ensuring that all maintenance required by the customer can be financed and carried out to the standard required by this Part.

b. person or group of persons shall be nominated with the responsibility of ensuring that the organization is always in compliance with this Subpart. Such person(s) shall be ultimately responsible to the accountable manager.

c. All paragraph (b) persons shall be able to show relevant knowledge, background and appropriate experience related to aircraft and/or component maintenance.

d. The organization shall have appropriate staff for the normal expected contracted work. The use of temporarily subcontracted staff is permitted in the case of higher than normally expected contracted work and only for personnel not issuing a certificate of release to service.

e. The qualification of all personnel involved in maintenance shall be demonstrated and recorded.

f. Personnel who carry out specialized tasks such as welding, non-destructive testing/inspection other than color contrast shall be qualified in accordance with an officially recognized standard.

g. The maintenance organization shall have sufficient certifying staff to issue M.A.612 and M.A.613 certificates of release to service for aircraft and components. They shall comply with the requirements of Part-66.

h. By derogation from point (g), the organization may use certifying staff qualified in accordance with the following provisions when providing maintenance support to operators involved in commercial operations, subject to appropriate procedures to be approved as part of the organization's manual:

1. For a repetitive preflight airworthiness directive which specifically states that the flight crew may carry out such airworthiness directive, the organization may issue a limited certifying staff authorization to the aircraft commander on the basis of the flight crew license held, provided that the organization ensures that sufficient practical training has been carried out to ensure that such person can accomplish the airworthiness directive to the required standard;
2. In the case of aircraft operating away from a supported location the organization may issue a limited certifying staff authorization to the aircraft commander on the basis of the flight crew license, provided that the organization ensures that sufficient practical training has been carried out to ensure that such person can accomplish the task to the required standard.

CERTIFYING STAFF (M.A.607)

a. In addition to point M.A.606(g), certifying staff can only exercise their privileges, if the organization has ensured:

1. That certifying staff can demonstrate that they meet the requirements of point 66.A.20(b) of Annex III (Part-66), except when Annex III (Part-66) refers to Member State regulation, in which case they shall meet the requirement of such regulation, and;
2. That certifying staff have an adequate understanding of the relevant aircraft and/or aircraft component (s) to be maintained together with the associated organization procedures.

b. In the following unforeseen cases, where an aircraft is grounded at a location other than the main base where no appropriate certifying staff is available, the maintenance organization contracted to provide maintenance support may issue a one-off certification authorization:
   1. To one of its employees holding type qualifications on aircraft of similar technology, construction and systems; or
   2. To any person with not less than three years maintenance experience and holding a valid ICAO aircraft maintenance license rated for the aircraft type requiring certification provided there is no organization appropriately approved under this Part at that location and the contracted organization obtains and holds on file evidence of the experience and the license of that person.

   All such cases must be reported to the competent authority within seven days of the issuance of such certification authorization. The approved maintenance organization issuing the one-off certification authorization shall ensure that any such maintenance that could affect flight safety is re-checked.

c. The approved maintenance organization shall record all details concerning certifying staff and maintain a current list of all certifying staff together with their scope of approval as part of the organization's manual pursuant to point M.A.604(a)5.

COMPONENTS, EQUIPMENT AND TOOLS (M.A.608)

a. The organization shall:
   1. Hold the equipment and tools specified in the maintenance data described in point M.A.609 or verified equivalents as listed in the maintenance organization manual as necessary for day-to-day maintenance within the scope of the approval; and,
   2. Demonstrate that it has access to all other equipment and tools used only on an occasional basis.
b. Tools and equipment shall be controlled and calibrated to an officially recognised standard. Records of such calibrations and the standard used shall be kept by the organization.
c. The organization shall inspect, classify and appropriately segregate all incoming components.

MAINTENANCE DATA (M.A.609)

The approved maintenance organization shall hold and use applicable current maintenance data specified in M.A.401 in the performance of maintenance including modifications and repairs. In the case of customer provided maintenance data, it is only necessary to have such data when the work is in progress.

MAINTENANCE WORK ORDERS (M.A.610)

Before the commencement of maintenance a written work order shall be agreed between the organization and the organization requesting maintenance to clearly establish the maintenance to be carried out.

MAINTENANCE STANDARDS (M.A.611)

All maintenance shall be carried out in accordance with the requirements of M.A. Subpart-D.

COMPONENT CERTIFICATE OF RELEASE TO SERVICE (M.A.612)

a. At the completion of all required component maintenance in accordance with this Subpart a component certificate of release to service shall be issued according to M.A.802, EASA Form 1 shall be issued except for those components fabricated in accordance with M.A.603(b).
b. The component certificate release to service document, EASA Form 1 may be generated from a computer database.

COMPONENT CERTIFICATE OF RELEASE TO SERVICE (M.A.613)

a. At the completion of all required component maintenance in accordance with this Subpart a component certificate of release to service shall be issued in accordance with point M.A.802. EASA Form 1 shall be issued except for those components maintained in accordance with points M.A.502(b), M.A.502(d) or M.A.502(e) and components fabricated in accordance with point M.A.603(c).
b. The component certificate release to service document, EASA Form 1 may be generated from a computer database.

MAINTENANCE RECORDS (M.A.614)

a. The approved maintenance organization shall record all details of work carried out. Records necessary to prove all requirements have been met for issuance of the certificate of release to service including the sub-contractor's release documents shall be retained.
b. The approved maintenance organization shall provide a copy of each certificate of release to service to the aircraft owner, together with a copy of any specific approved repair/modification data used for repairs/modifications carried out. The approved maintenance organization shall retain a copy of all maintenance records and any associated maintenance data for three years from the date the aircraft or aircraft component to which the work relates was released from the approved maintenance organization.
    1. The records shall be stored in a manner that ensures protection from damage and theft.
    2. All computer hardware used to ensure backup shall be stored in a different location from that containing the working data in an environment that ensures they remain in good condition.
    3. Where an approved maintenance organization terminates its operation, all retained maintenance records covering the last two years shall be distributed to the last owner or customer of the respective aircraft or component or shall be stored as specified by the competent authority.

PRIVILEGES OF THE ORGANIZATION (M.A.615)

The maintenance organization approved in accordance with Section A, Subpart-F of this Annex (Part-M), may:

a. Maintain any aircraft and/or component for which it is approved at the locations specified in the approval certificate and the maintenance organization manual;
b. Arrange for the performance of specialized services under the control of the maintenance organization at another organization appropriately qualified, subject to appropriate procedures being established as part of the Maintenance Organization Manual approved by the competent authority directly;
c. Maintain any aircraft and/or component for which it is approved at any location subject to the need of such maintenance arising either from the unserviceability of the aircraft or from the necessity of supporting occasional maintenance, subject to the conditions specified in the Maintenance Organization Manual;
d. Issue certificates of release to service on completion of maintenance, in accordance with point M.A.612 or point M.A.613.

ORGANIZATIONAL REVIEW (M.A.616)

To ensure that the approved maintenance organization continues to meet the requirements of this Subpart, it shall organize, on a regular basis, organizational reviews.

CHANGES TO THE APPROVED MAINTENANCE ORGANIZATION (M.A.617)

In order to enable the competent authority to determine continued compliance with this Part, the approved maintenance organization shall notify it of any proposal to carry out any of the following changes, before such changes take place:

1. The name of the organization;
2. The location of the organization;
3. Additional locations of the organization;
4. The accountable manager;
5. Any of the persons specified in point M.A.606(b);
6. The facilities, equipment, tools, material, procedures, work scope and certifying staff that could affect the approval. In the case of proposed changes in personnel not known to the management beforehand, these changes shall be notified at the earliest opportunity.

In the case of proposed changes in personnel not known to the management beforehand, these changes shall be notified at the earliest opportunity.

CONTINUED VALIDITY OF APPROVAL (M.A.618)

a. An approval shall be issued for an unlimited duration. It shall remain valid subject to:
    1. The organization remaining in compliance with this Part, in accordance with the provisions related to the handling of findings as specified under point M.A.619, and;
    2. The competent authority being granted access to the organization to determine continued compliance with this Part, and; 3. the approval not being surrendered or revoked;
b. Upon surrender or revocation, the approval certificate shall be returned to the competent authority.
c. Upon surrender or revocation, the approval certificate shall be returned to the competent authority.

FINDINGS (M.A.619)

a. A level 1 finding is any significant non-compliance with Part-M requirements which lowers the safety standard and hazards seriously the flight safety.
b. A level 2 finding is any non-compliance with the Part-M requirements which could lower the safety standard and possibly hazard the flight safety.
c. After receipt of notification of findings according to point M.B.605, the holder of the maintenance organization approval shall define a corrective action plan and demonstrate corrective action to the satisfaction of the competent authority within a period agreed with this authority.

Question: 3-1
No organization, in Europe, can deliver a return to service certificate. if not approved under _____.

Question: 3-2
Maintenance records must be retained by an approved maintenance organization for at least _____.

Question: 3-3
A certificate of release to service (CRS) authorizes the transfer of the aircraft (or aircraft parts) from the _____ to the operator.

Question: 3-4
The approved maintenance organization shall retain a copy of all maintenance records and any associated maintenance data for _____ years.

Question: 3-5
The _____ _____ of a Part-145 maintenance organization must be independent.

Question: 3-6
True or False… A Part-145 approved maintenance organization is authorized to subcontract work.

Question: 3-7
The name of the document that contains the material specifying the scope of work to be undertaken and that shows how the maintenance organization intends to comply with Part-145 is called the _____.

Question: 3-8
Tools and equipment shall be controlled and _____ to an officially recognized standard.

ANSWERS

Answer: 3-1

Part-145.

Answer: 3-2
2 years.

Answer: 3-3
maintenance organization.

Answer: 3-4
three.

Answer: 3-5
quality assurance.

Answer: 3-6
True.

Answer: 3-7
maintenance organization exposition.

Answer: 3-8
calibrated.

PART-66 SYLLABUS **LEVELS**

CERTIFICATION CATEGORY →	B1	B2

Sub-Module 04

AIR OPERATIONS

Knowledge Requirements

10.4 - Air operations

General understanding of EU-OPS.	1	1
Air Operators Certificates;		
Operator's responsibilities, in particular regarding continuing airworthiness and maintenance;		
Aircraft Maintenance Program;		
MEL//CDL;		
Documents to be carried on board;		
Aircraft placarding (markings).		

Level 1
A familiarization with the principal elements of the subject.

Objectives:

(a) The applicant should be familiar with the basic elements of the subject.
(b) The applicant should be able to give a simple description of the whole subject, using common words and examples.
(c) The applicant should be able to use typical terms.

INTRODUCTION

Commission Regulation (EU) No 965/2012 of 5 October 2012 and its subsequent amendments lay down technical requirements and administrative procedures related to air operations pursuant to Regulation (EC) No 216/2008 of the European parliament and of the council (basic regulation).

This Regulation is officially referred to as IR-OPS (implementing rules – operations), but it is also known as EASA OPS or EASA AIR OPS; it replaces EU-OPS (Regulation (EC) 859/2008) with regard to commercial operations of airplanes (A) and JAR-OPS 3 with regard to commercial operations of helicopters (H) as well as old national requirements on commercial operations of sailplanes (S) and balloons (B) and existing national requirements on non-commercial operations of complex and other-than-complex aircraft (including S and B) and specialized air operations (most notably aerial work). The Regulation also establishes detailed rules for ramp inspections of aircraft of operators under the safety oversight of another State when landed at aerodromes located in the territory subject to the provisions of the Treaty.

Annexes I-V of the Regulation, covering authority, organizational, commercial air transport operational requirements and operations requiring specific approval, became applicable as of 28 October 2012. The deadline for establishing compliance with annexes I-V of the Regulation was 28 October 2014.

The deadlines for establishing compliance with annexes VI to VII of commission Regulation (EU) No 965/2012, as later amended by commission Regulation (EU) No 800/2013 of 14 August 2013, are 25 August 2016 (non-commercial operations) and 21 April 2017 (specialized operations).

SCOPE

The following types of civil air operations are within the scope of Regulation (EU) No 965/2012 and its subsequent amendments:

- Specialized and non-specialized;
- Commercial and non-commercial;
- With complex motor-powered aircraft and with other-than-complex motor-powered aircraft.

SPECIALIZED OPERATIONS

The term 'specialized operations' refers to activities meeting the following criteria:

- The aircraft is flown close to the surface to fulfill the mission;
- Abnormal maneuvers are performed;
- Special equipment is necessary to fulfill the mission and which affects the maneuverability of the aircraft;
- Substances are released from the aircraft during the flight where these substances are either harmful or affect the maneuverability of the aircraft;
- External loads or goods are lifted or towed; or
- Persons enter or leave the aircraft during flight.

Operations not meeting the above criteria are 'non-specialized'.

COMMERCIAL OPERATIONS

The term 'commercial' refers to aircraft operations involving the transport of passengers, cargo or mail for remuneration or hire.

Operations involving the transport of passengers, cargo or mail not for remuneration or hire are 'non-commercial'.

COMPLEX AIRCRAFT

The term 'complex motor-powered aircraft' refers to:
An airplane:

- with a maximum certificated take-off mass exceeding 5 700 kg; or
- certificated for a maximum passenger seating configuration of more than nineteen; or
- certificated for operation with a minimum crew of at least two pilots; or
- equipped with (a) turbojet engine(s) or more than one turboprop engine; or

A helicopter certificated:

- for a maximum take-off mass exceeding 3 175 kg; or
- for a maximum passenger seating configuration of more than nine; or
- for operation with a minimum crew of at least two pilots; or

A tilt rotor aircraft.

An aircraft not meeting the above criteria is an 'other-than-complex motor-powered aircraft'.

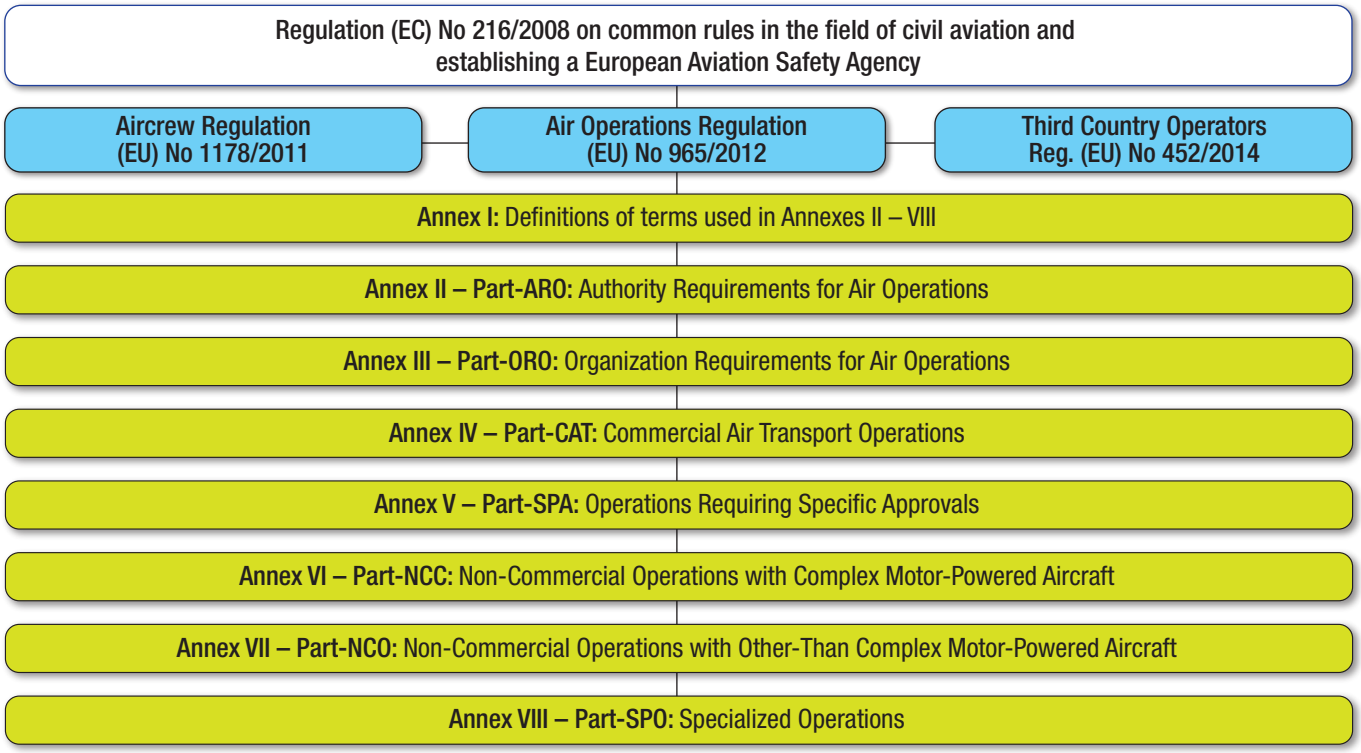
CONTENTS OF REGULATIONS

Annex I	Definitions
Annex II	Authority Requirements for Air Operations (Part-ARO)
Annex III	Organization Requirements for Air Operations (Part-ORO)
Annex IV	Commercial Air Transport Operations (Part-CAT)
Annex V	Specific Approvals (Part-SPA)
Annex VI	Non-Commerical Operations with Complex Motor-Powered Aircraft (Part-NCC)
Annex VII	Non-Commercial Operations with other-than Complex Motor-Powered Aircraft (Part-NCO)
Annex VIII	Specialized Operations (Part-SPO)

GENERAL UNDERSTANDING OF AIR OPERATIONS

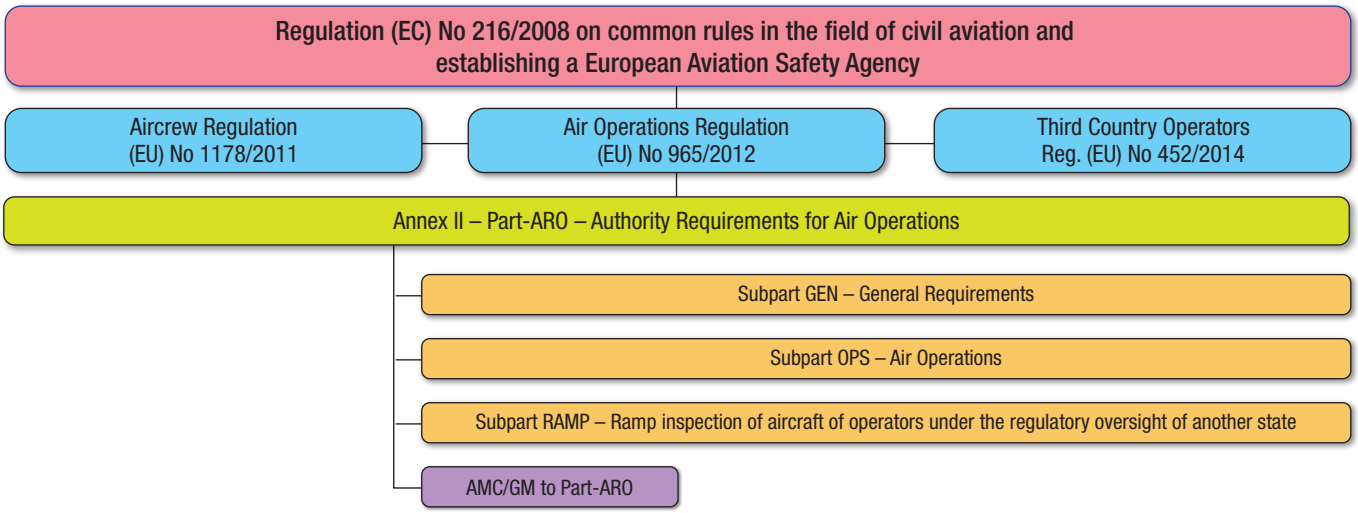
REGULATION ON AIR OPERATIONS – STRUCTURE

Regulation (EU) No 965/2012 on Air Operations contains eight Annexes. The following diagrams illustrate the contents of each Annex. The contents of the Annexes are available via the Regulations page which can be found at: *http://easa.europa.eu/regulations#regulations-air-operations.*

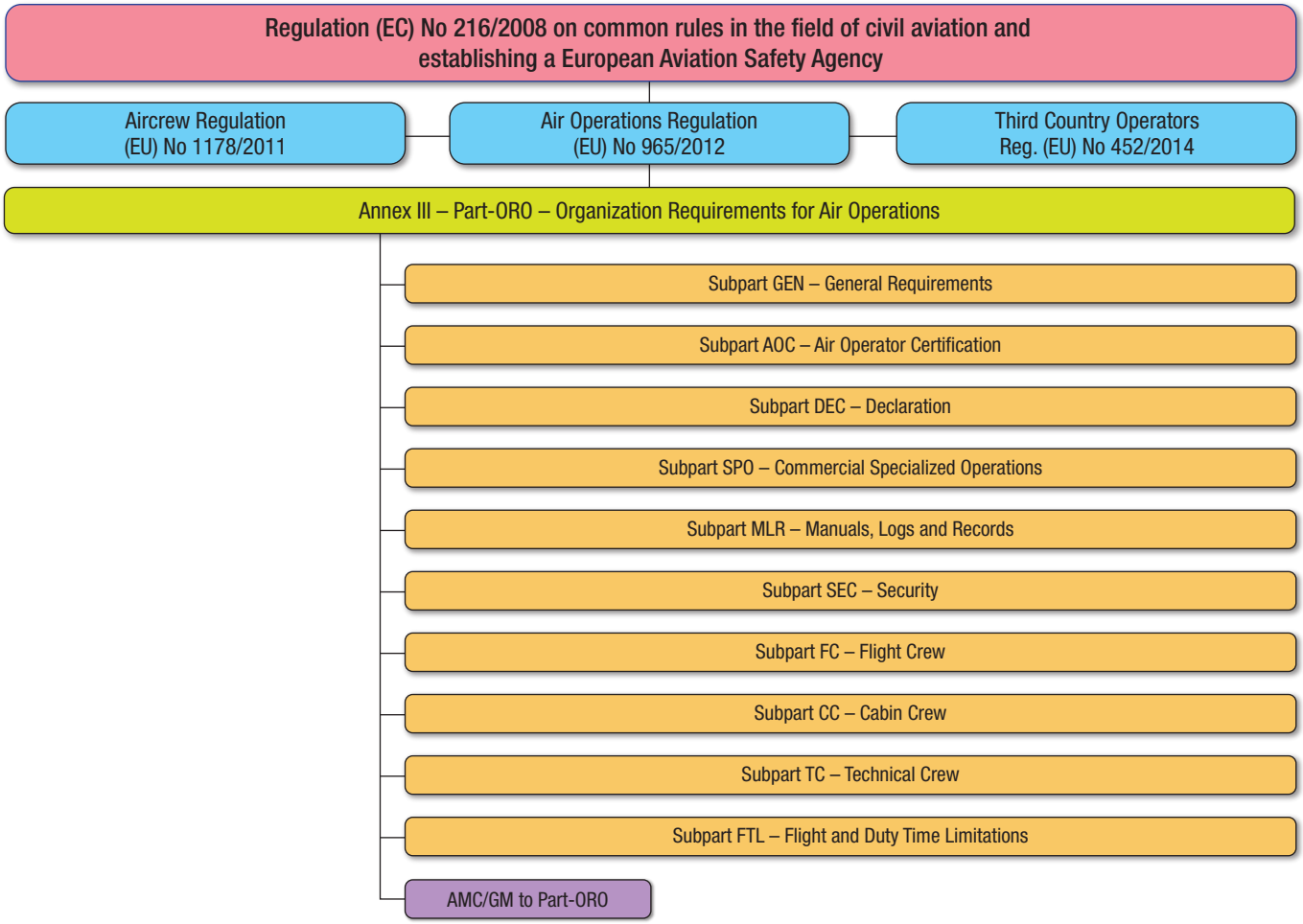


Annex I – Definitions for terms used in Annexes II to VII

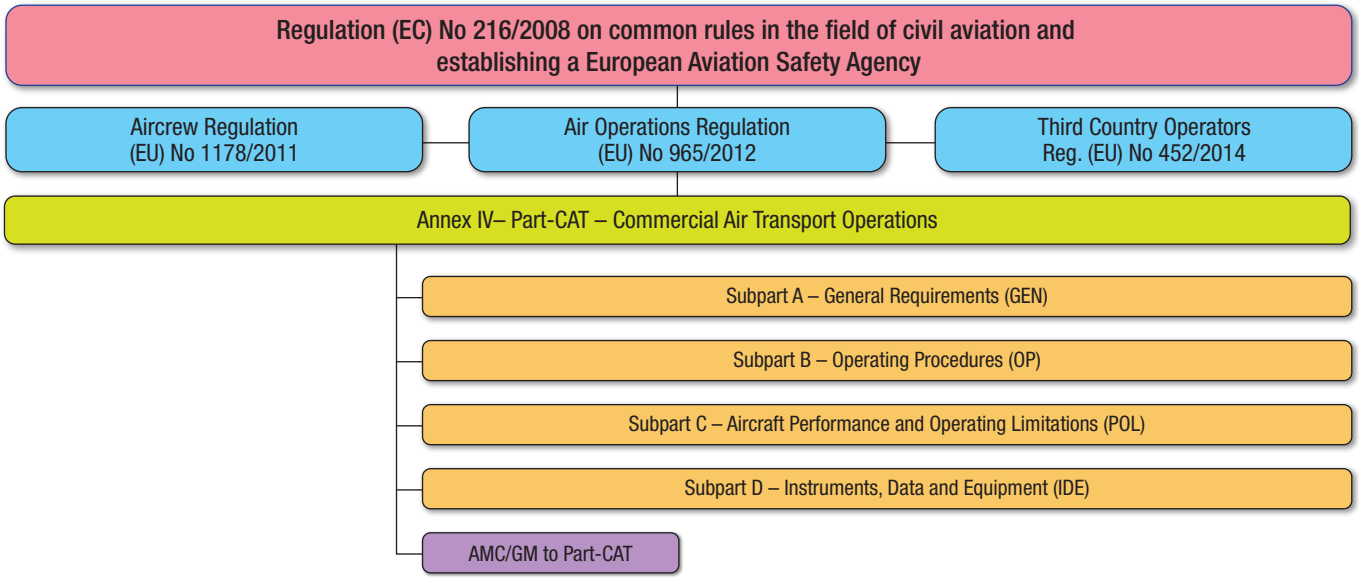
Annex II – Part-ARO – Authority Requirements for Air Operations



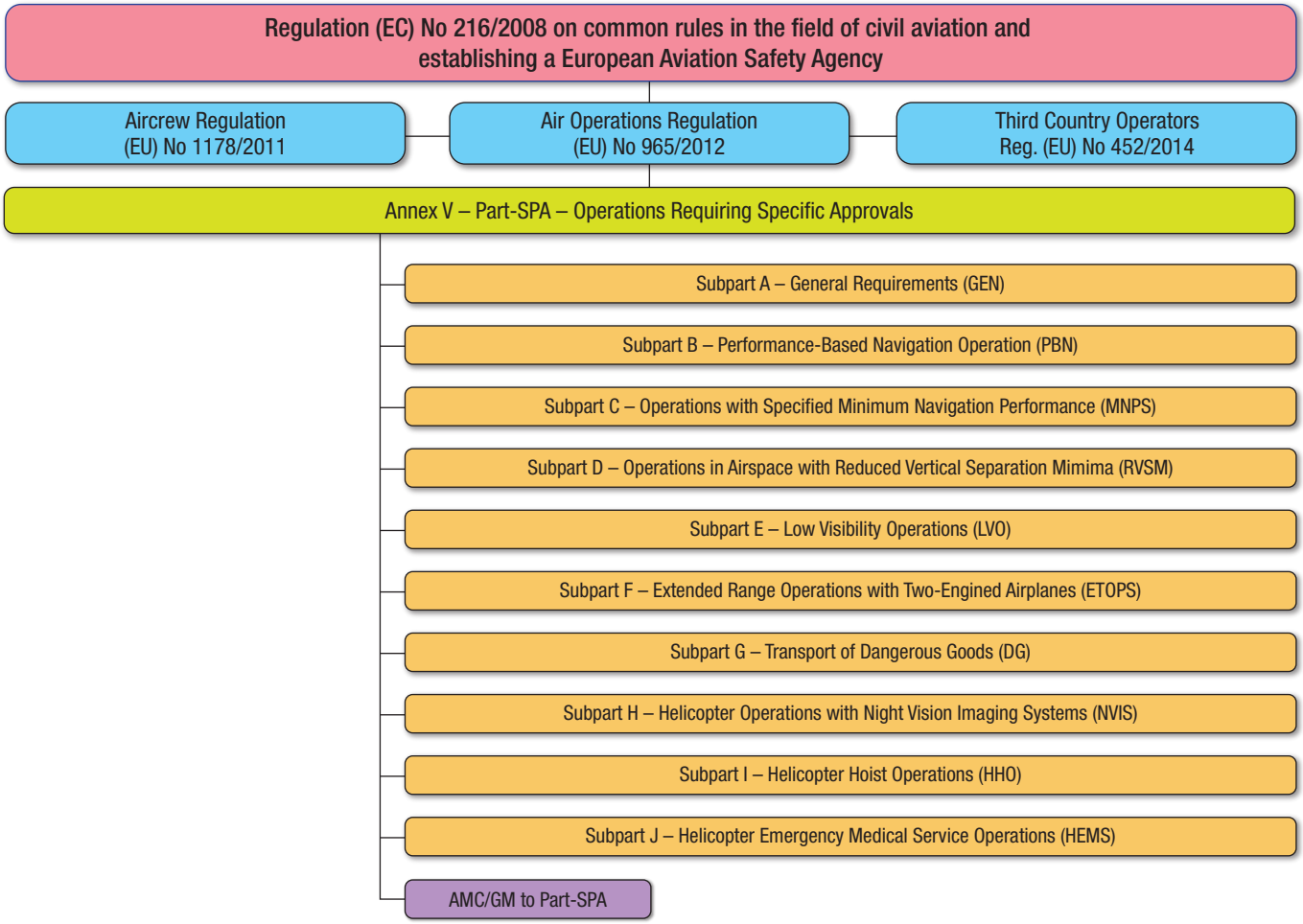
Annex III – Part-ORO – Organization Requirements for Air Operations



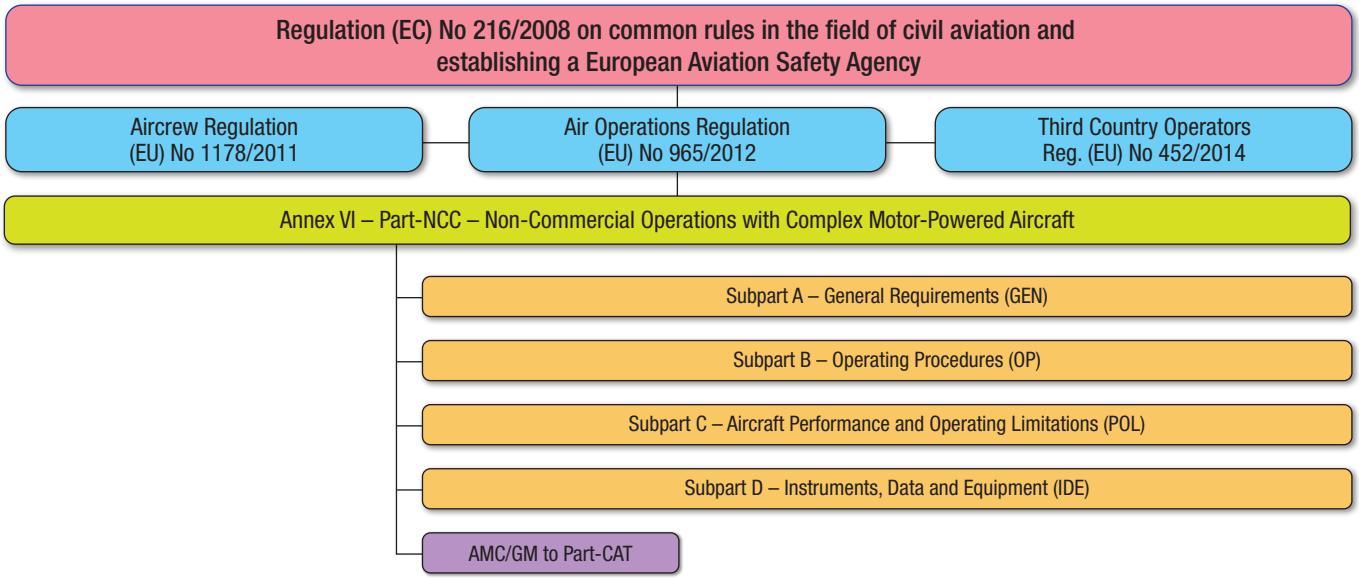
Annex IV– Part-CAT – Commercial Air Transport Operations



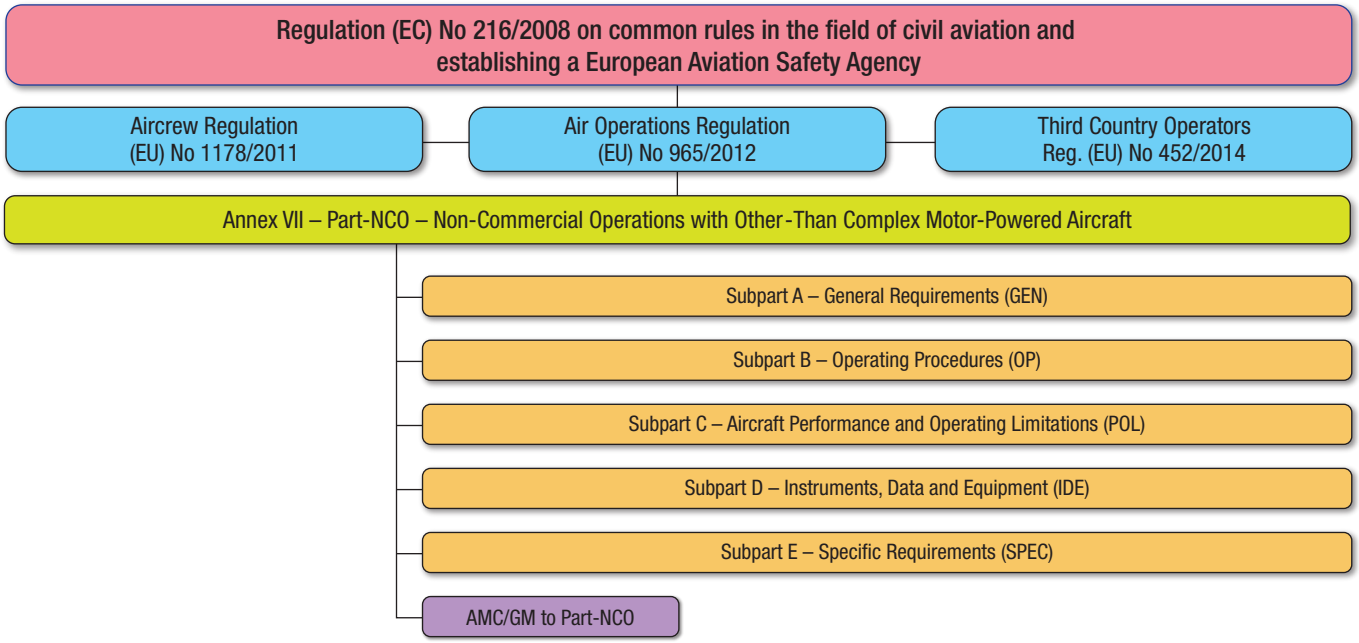
Annex V – Part-SPA – Operations Requiring Specific Approvals



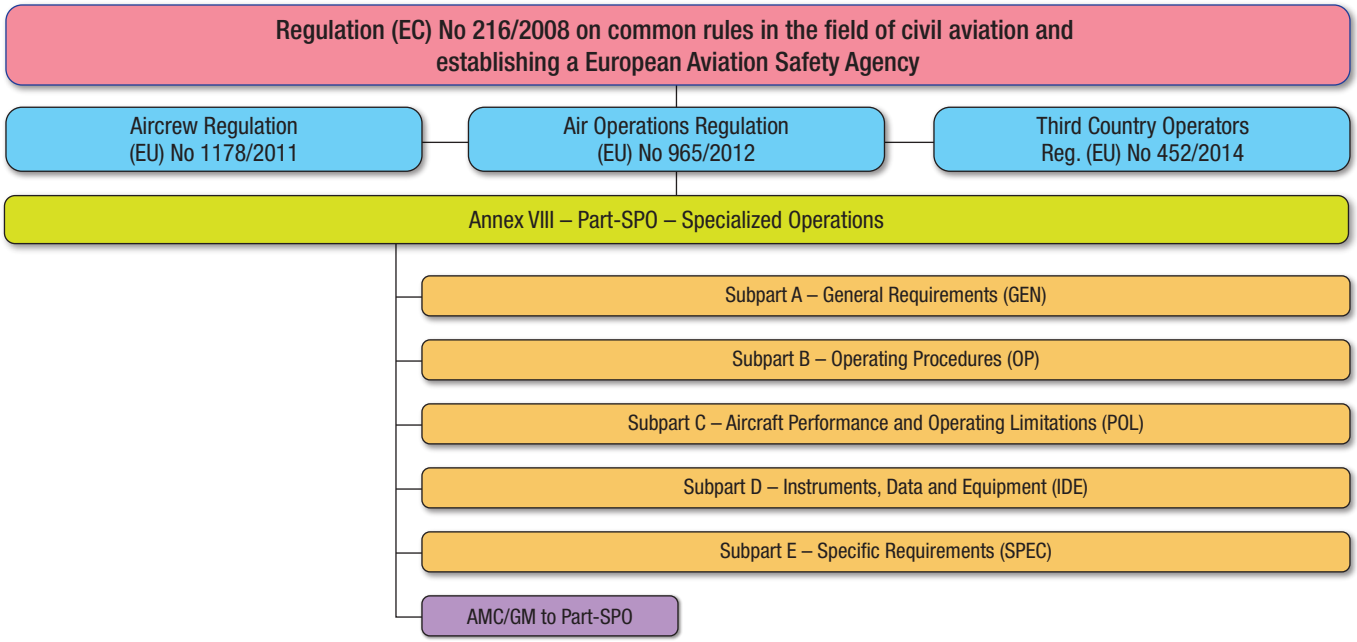
Annex VI – Part-NCC – Non-Commercial Operations with Complex Motor-Powered Aircraft



Annex VII – Part-NCO – Non-Commercial Operations with Other-Than Complex Motor-Powered Aircraft

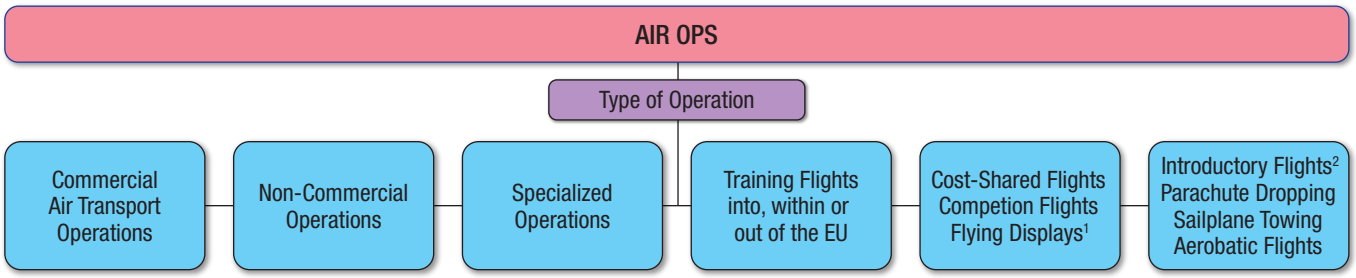


Annex VIII – Part-SPO – Specialized Operations



Regulation (EU) 965/2012, as amended by 800/2013

Analysis by Category, Regulation and Implementation



LEGEND:

CMPA = Complex motor-powered aircraft; otCMPA = other than complex aircraft; EIF = entry into force

[1] Cost-shared flights by private individuals, on the condition that the direct cost is shared by all the occupants of the aircraft, pilot included and the number of persons sharing the direct costs is limited to six; Competition flights or flying displays, on the condition that the remuneration or any valuable consideration given for such flights is limited to recovery of direct costs and a proportionate contribution to annual costs, as well as prizes of no more than a value specified by the competent authority.

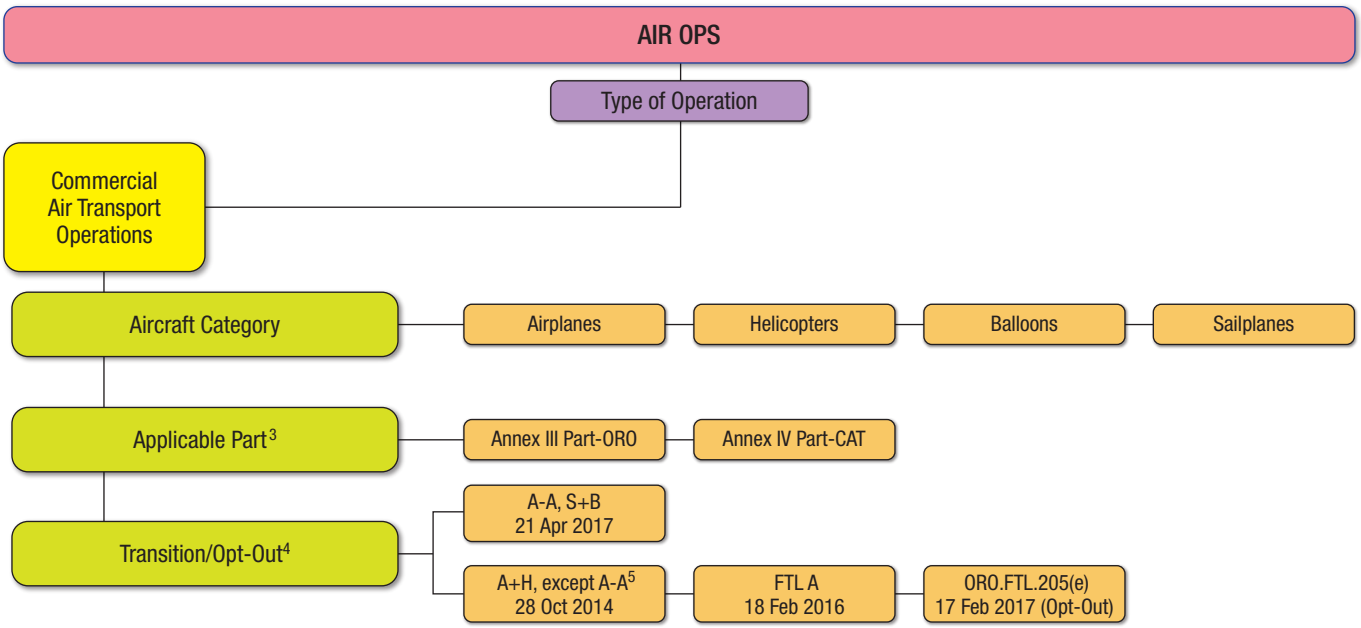
[2] 'Introductory flight' means any flight against remuneration or other valuable consideration consisting of an air tour of short duration, offered by an approved training organization or an organization created with the aim or promoting aerial sport or leisure aviation, for the purpose of attracting new trainees or new members.

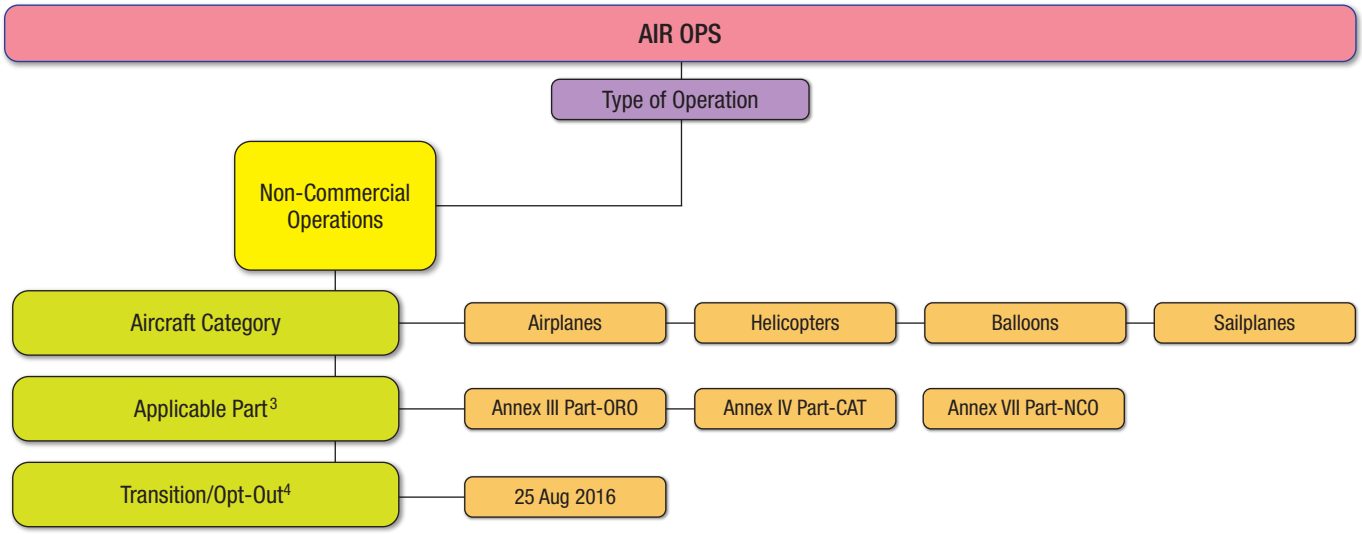
[3] Annex I Definitions contains all definitions used throughout Annexes II-VIII
Annex II Part-ARO applies to competent authorities responsible to oversee any operation (ref. ARO.GEN.300)
Annex V Part-SPA applies to any operator wishing to conduct operations requiring a specific password

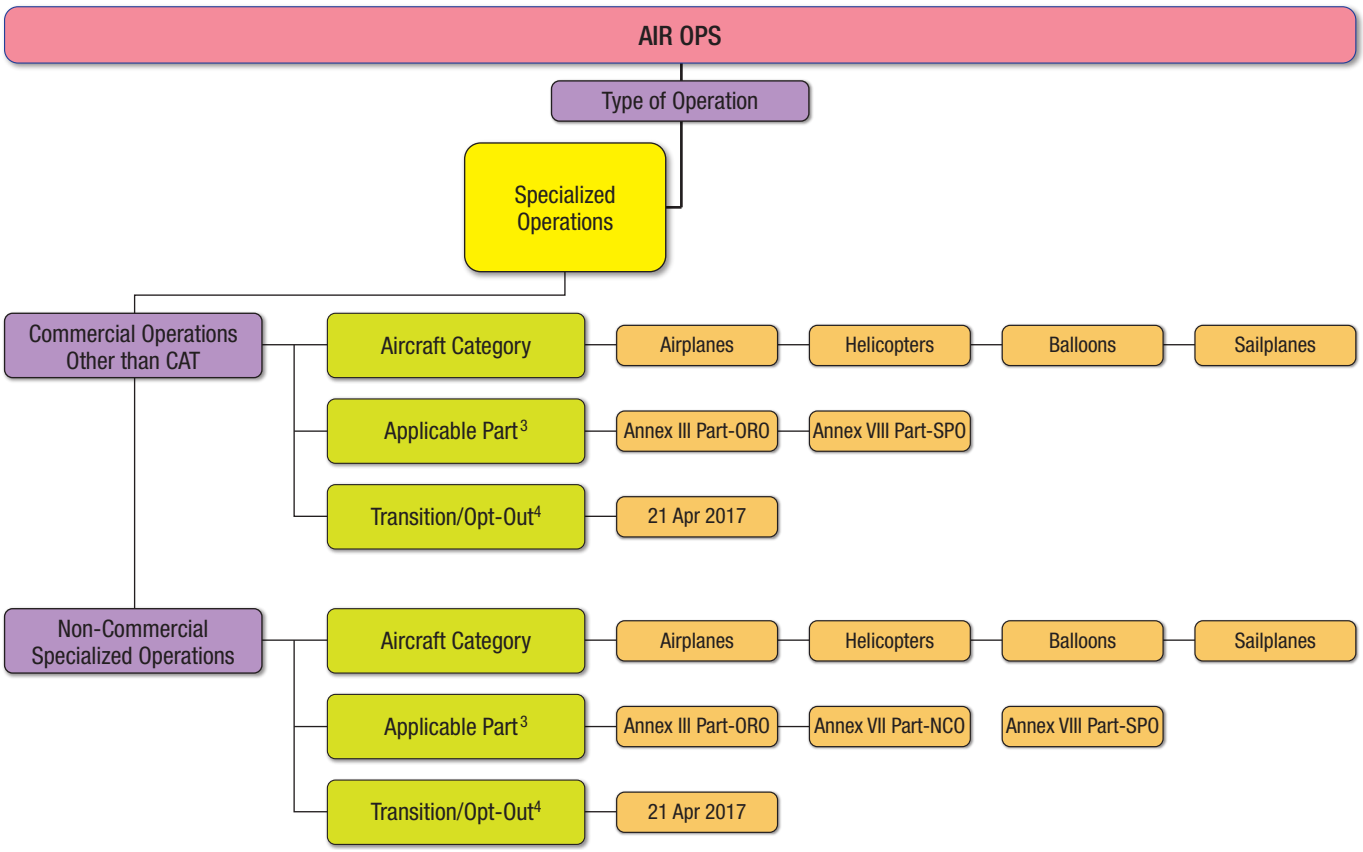
[4] Transition OSD:
– MEL = OSD Compliant = At the earliest opportunity and not later than 18 Dec 2017 or 2 years after OSD approval, whichever is later
– FC/CC = OSD Compliant Training undertaken by 18 Dec 2017 or 2 years after OSD approval, whichever is later

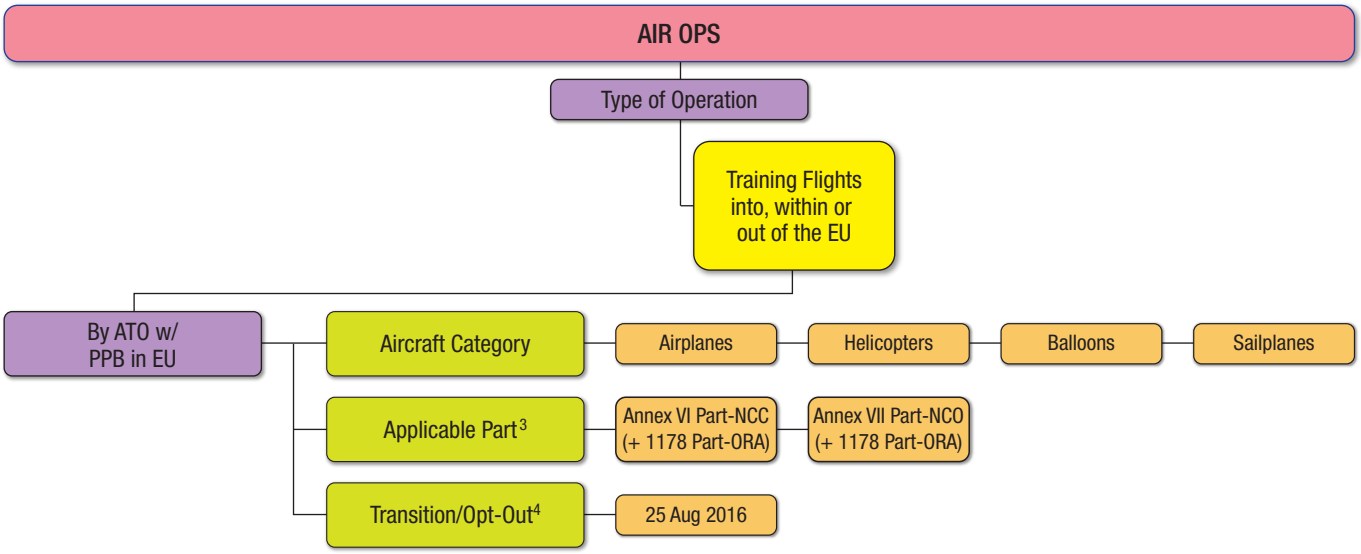
[5] CAT operations starting and ending at the same aerodrome/operating site with performance Class B airplanes or non-complex helicopters

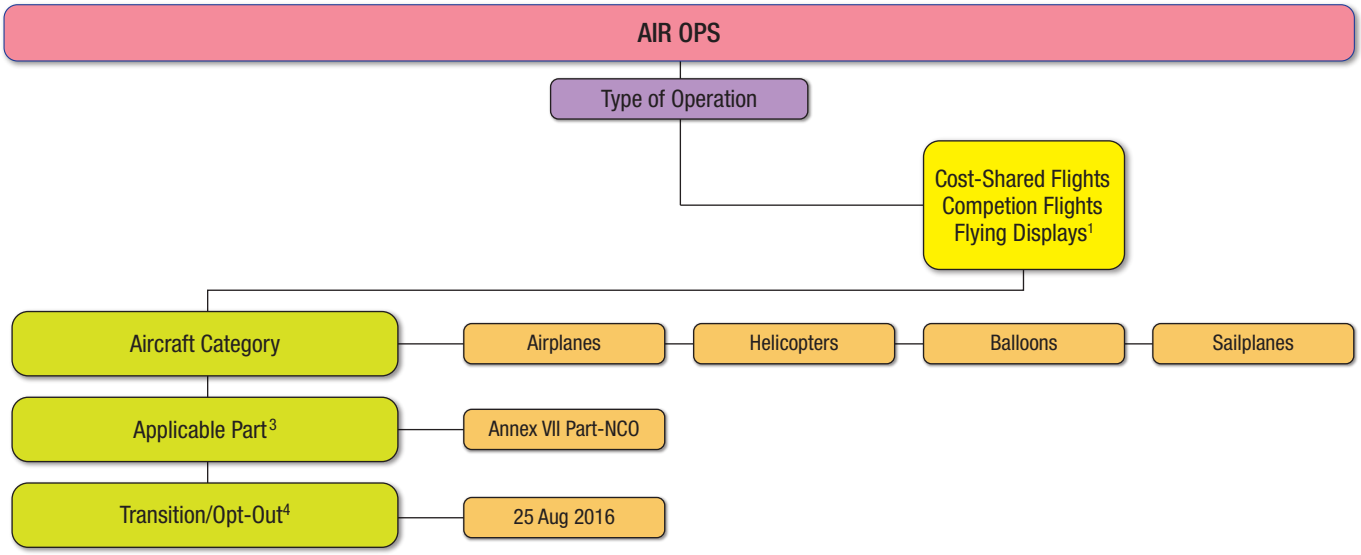
[6] Introductory flights, parachute dropping, sailplane towing or aerobatic flights performed either by a training organization having its principal place of business in a Member State and approved in accordance with Regulation (EU) No 1178/2011, or by an organization created with the aim or promoting aerial sport or leisure aviation, on the condition that the aircraft is operated by the organiztion on the basis of ownership or dry lease, that the flight does not generate profits distributed outside of the organization, and that whenever non-members of the organization are involved, such flights represent only a marginal acitivy of the organization.

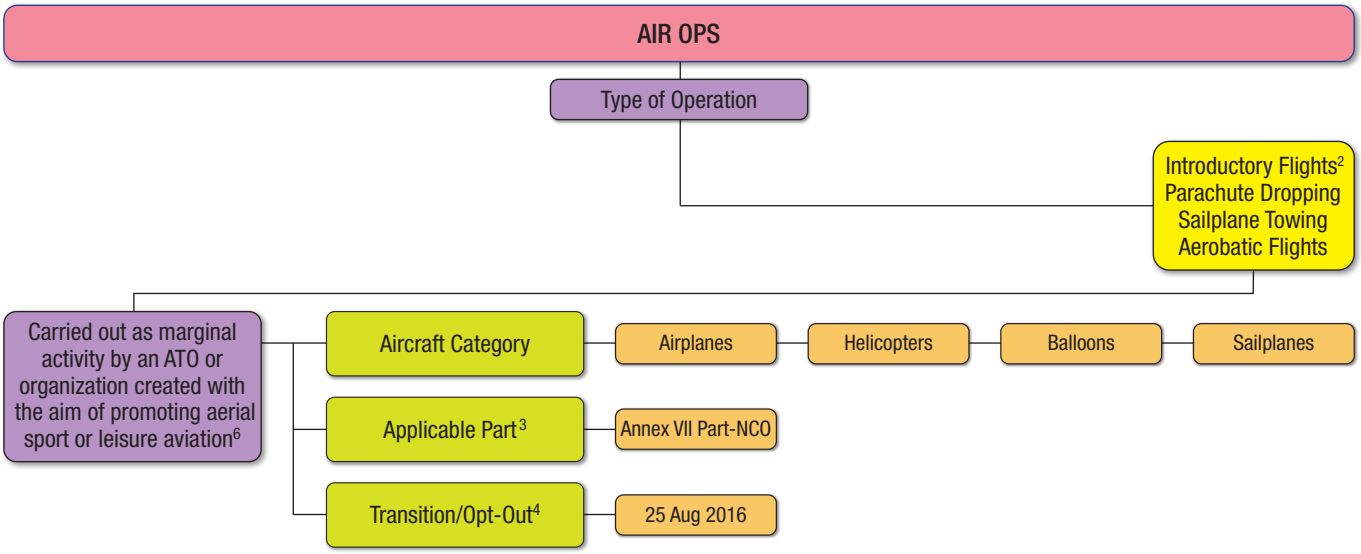



AIR OPS
Type of Operation
Non-Commercial Operations
Aircraft Category
Airplanes
Helicopters
Balloons
Sailplanes
Applicable Part 3
Annex III Part-ORO
Annex IV Part-CAT
Annex VII Part-NCO
Transition/Opt-Out4
25 Aug 2016


AIR OPS
Type of Operation
Specialized Operations
Commercial Operations Other than CAT
Aircraft Category
Airplanes
Helicopters
Balloons
Sailplanes
Applicable Part 3
Annex III Part-ORO
Annex VIII Part-SPO
Transition/Opt-Out4
21 Apr 2017
Non-Commercial Specialized Operations
Aircraft Category
Airplanes
Helicopters
Balloons
Sailplanes
Applicable Part 3
Annex III Part-ORO
Annex VII Part-NCO
Annex VIII Part-SPO
Transition/Opt-Out4
21 Apr 2017


AIR OPS
Type of Operation
Training Flights into, within or out of the EU
By ATO w/ PPB in EU
Aircraft Category
Airplanes
Helicopters
Balloons
Sailplanes
Applicable Part 3
Annex VI Part-NCC (+ 1178 Part-ORA)
Annex VII Part-NCO (+ 1178 Part-ORA)
Transition/Opt-Out4
25 Aug 2016


AIR OPS
Type of Operation
Cost-Shared Flights Competion Flights Flying Displays1
Aircraft Category
Airplanes
Helicopters
Balloons
Sailplanes
Applicable Part 3
Annex VII Part-NCO
Transition/Opt-Out4
25 Aug 2016


AIR OPS
Type of Operation
Introductory Flights2 Parachute Dropping Sailplane Towing Aerobatic Flights
Carried out as marginal activity by an ATO or organization created with the aim of promoting aerial sport or leisure aviation6
Aircraft Category
Airplanes
Helicopters
Balloons
Sailplanes
Applicable Part 3
Annex VII Part-NCO
Transition/Opt-Out4
25 Aug 2016

CERTIFICATION OF COMMERCIAL AIR TRANSPORT OPERATORS

ISSUE OF THE AIR OPERATOR CERTIFICATE (ARO.OPS 100)

a. The competent authority shall issues the air operators certificate (AOC) when satisfied that the operator has demonstrated compliance with the elements required in ORO.AOC.100.

b. The certificate shall include the associated operations specifications.

AIR OPERATOR CERTIFICATE

(Approval schedule for air operators)

Types of operation: Commercial air transport (CAT) ☐ Passengers; ☐ Cargo;

☐ Other ([1]).....

Commercial specialised operations (SPO) ☐ ([2]).....

5	State of the operator ([3]) Issuing authority ([4])	([5])
AOC ([6]):	Operator name ([7])	Operational points of contact: ([9])
	Dba trading name ([8])	Contact details, at which operational management can be contacted without undue delay, are listed in ..... ([12]).
	Operator address ([10]):	
	Telephone ([11]): Fax E-mail:	

This certificate certifies that ..... ([13]) is authorised to perform commercial air operations, as defined in the attached operations specifications, in accordance with the operations manual, Annex IV to Regulation (EC) No 216/2008 and its Implementing Rules.

Date of issue ([14]):	Name and signature ([15]): Title:

([1]) Other type of transportation to be specified.
([2]) Specify the type of operation, e.g. agriculture, construction, photography, surveying, observation and patrol, aerial advertisement.
([3]) Replaced by the name of the State of the operator.
([4]) Replaced by the identification of the issuing competent authority.
([5]) For use of the competent authority.
([6]) Approval reference, as issued by the competent authority.
([7]) Replaced by the operator's registered name.
([8]) Operator's trading name, if different. Insert 'Dba' (for 'Doing business as') before the trading name.
([9]) The contact details include the telephone and fax numbers, including the country code, and the e-mail address (if available) at which operational management can be contacted without undue delay for issues related to flight operations, airworthiness, flight and cabin crew competency, dangerous goods and other matters as appropriate.
([10]) Operator's principal place of business address.
([11]) Operator's principal place of business telephone and fax details, including the country code. E-mail to be provided if available.
([12]) Insertion of the controlled document, carried on board, in which the contact details are listed, with the appropriate paragraph or page reference. E.g.: 'Contact details … are listed in the operations manual, gen/basic, chapter 1, 1.1'; or ' … are listed in the operations specifications, page 1'; or ' … are listed in an attachment to this document'.
([13]) Operator's registered name.
([14]) Issue date of the AOC (dd-mm-yyyy).
([15]) Title, name and signature of the competent authority representative. In addition, an official stamp may be applied on the AOC.

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Appendix I - EASA Air Operator Certificate

OPERATIONS SPECIFICATIONS (subject to the approved conditions in the operations manual)				
Issuing Authority Contact Details Telephone ([1]): _____ ; Fax: _____; E-mail: _____				
AOC ([2]): Operator Name ([3]): Date ([4]): Signature: Dba trading name Operations specifications:				
Aircraft model ([5]): Registration marks ([6]):				
Commercial operations ☐				
Area of operation ([7])				
Special limitations ([8])				
Specific approvals:	Yes	No	Specification ([9])	Remarks
Dangerous goods	☐	☐		
Low visibility operations Take-off Approach and landing Take-off	☐ ☐	☐ ☐	RVR ([11]): m CAT ([10]) .... RVR: m DH: ft	
RVSM ([12]) ☐ N/A	☐	☐		
ETOPS ([13]) ☐ N/A	☐	☐	Maximum diversion time ([14]): min.	
Navigation specifications for PBN operations ([15])	☐	☐		([16])
Minimum navigation performance specification	☐	☐		
Helicopter operations with the aid of night vision imaging systems	☐	☐		
Helicopter hoist operations	☐	☐		
Helicopter emergency medical service operations	☐	☐		
Cabin crew training ([17])	☐	☐		
Issue of CC attestation ([18])	☐	☐		
Continuing airworthiness	☐	☐	([19])	
Others ([20])				

Appendix II - Operations Specifications Form

RAMP INSPECTIONS OF AIRCRAFT OF OPERATORS UNDER THE REGULATORY OVERSIGHT OF ANOTHER STATE (SUBPART-RAMP)

SCOPE (ARO.RAMP.005)

This Subpart establishes the requirements to be followed by the competent authority or the Agency when exercising its tasks and responsibilities regarding the performance of ramp inspections of aircraft used by third country operators or used by operators under the regulatory oversight of another Member State when landed at aerodromes located in the territory subject to the provisions of the Treaty.

Proof of Ramp Inspection

Date:	Time:	Place:	**Free format information of competent authority (logo, contact details tel./fax/e-mail)**
Operator:		State:	AOC No:
Route from:	Flight No:	Route to:	Flight No:
Flight type:	Chartered by operator:	Aircraft type:	Aircraft configuration:
Charterer's State:		Registration mark:	Construction No:
Flight crew State(s) of licensing:	Acknowledgement of receipt(*) Name: ..... Function: ..... Function:	Signature:	

		Check	Remark
A	**Flight deck**		
1	General condition		
2	Emergency exit		
3	Equipment		
	Documentation		
4	Manuals		
5	Checklists		
6	Navigation/instrument charts		
7	Minimum equipment list		
8	Certificate of registration		
9	Noise certificate (where applicable)		
10	AOC or equivalent		
11	Radio licence		
12	Certificate of airworthiness		
	Flight data		
13	Flight preparation		
14	Mass and balance calculation		
	Safety equipment		
15	Hand fire extinguishers		
16	Life-jackets/flotation devices		
17	Harness		
18	Oxygen equipment		
19	Independent portable light		

		Check	Remark
	Flight crew		
20	Flight crew licence/ composition		
	Journey log book/Technical log or equivalent		
21	Journey log book or equivalent		
22	Maintenance release		
23	Defect notification and rectification (incl. tech log)		
24	Pre-flight inspection		
B	**Cabin safety**		
1	General internal condition		
2	Cabin crew station and crew rest area		
3	First-aid kit/Emergency medical kit		
4	Hand fire extinguishers		
5	Life-jackets/Flotation devices		
6	Seat belt and seat condition		
7	Emergency exit, lighting and independent portable light		
8	Slides/Life-rafts (as required), ELT		
9	Oxygen supply (cabin crew and passengers)		
10	Safety Instructions		
11	Cabin crew members		
12	Access to emergency exits		
13	Stowage of passenger baggage		
14	Seat capacity		

		Check	Remark
C	**Aircraft condition**		
1	General external condition		
2	Doors and hatches		
3	Flight controls		
4	Wheels, tyres and brakes		
5	Undercarriage, skids/floats		
6	Wheel well		
7	Powerplant and pylon		
8	Fan blades, propellers, rotors (main/tail)		
9	Obvious repairs		
10	Obvious unrepaired damage		
11	Leakage		
D	**Cargo**		
1	General condition of cargo compartment		
2	Dangerous goods		
3	Cargo stowage		
E	**General**		
1	General		

Appendix III - Proof of Ramp Inspection Form

Action Taken		Inspection Item	Category	Remarks
	(3d) Immediate operating ban			
	(3c) Aircraft grounded by inspecting NAA			
	(3b) Corrective actions before flight			
	(3a) Restrictions on the aircraft operation			
	(2) Information to the authority and operator			
	(1) Information to the pilot-in-command/			
	(0) No remarks			
Inspector(s) sign or code				
Crew comments (if any):				

(*) Signature by any member of the crew or other representative of the inspected operator does in no way imply acceptance of the listed findings but simply a confirmation that the aircraft has been inspected on the date and at the place indicated on this document.

This report represents an indication of what was found on this occasion and must not be construed as a determination that the aircraft is fit for the intended flight. Data submitted in this report can be subject to changes upon entering into the centralised database.

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Appendix III (cont.) - Proof of Ramp Inspection Form

Competent authority *(name)*

(State)

Ramp inspection report

No: _._._._-_._._._-_._._._

Source:	RI		
Date:	__.__.____	Place:	_____
Local time:	__:__		
Operator:	_____	AOC number:	_____
State:	_____	Type of operation:	_____
Route from:	_____	Flight number:	_____
Route to:	_____	Flight number:	_____
Chartered by operator*:	_____	Charterer's State*:	_____
* *(where applicable)*			
Aircraft type	_____	Registration marks:	_____
Aircraft configuration:	_____	Construction number:	_____
Flight crew: State of licensing:	_____		
2nd State of licensing*:	_____		
* *(where applicable)*			

Findings:

Code /	Std /	Ref /	Cat /	Finding	Detailed description
_-_-_	_	_-_-_	_	.....	.....
_-_-_	_	_-_-_	_	.....	.....
_-_-_	_	_-_-_	_	.....	.....
_-_-_	_	_-_-_	_	.....	.....
_-_-_	_	_-_-_	_	.....	.....

Class of actions taken:	Detailed description
☐ 3d) Immediate operating ban	.....
☐ 3c) Aircraft grounded by inspecting competent authority	.....
☐ 3b) Corrective actions before flight	.....
☐ 3a) Restriction on aircraft flight operation	.....
☐ 2) Information to the competent authority and operator	.....
☐ 1) Information to pilot-in-command	.....

Additional information (if any)

Inspector's names or number: .....

— This report represents an indication of what was found on this occasion and must not be construed as a determination that the aircraft is fit for the intended flight.

— Data submitted in this report can be subject to changes for correct wording upon entering into the centralised database.

Appendix IV - Proof of Ramp Report Form

Item code	Checked	Remark
A. Flight deck		
General		
1. General condition	1.	1.
2. Emergency exit	2.	2.
3. Equipment	3.	3.
Documentation		
4. Manuals	4.	4.
5. Checklists	5.	5.
6. Radio navigation charts	6.	6.
7. Minimum equipment list	7.	7.
8. Certificate of registration	8.	8.
9. Noise certificate (where applicable)	9.	9.
10. AOC or equivalent	10.	10.
11. Radio licence	11.	11.
12. Certificate of airworthiness (C of A)	12.	12.
Flight data		
13. Flight preparation	13.	13.
14. Mass and balance calculation	14.	14.
Safety equipment		
15. Hand fire extinguishers	15.	15.
16. Life-jackets/flotation device	16.	16.
17. Harness	17.	17.
18. Oxygen equipment	18.	18.
19. Independent portable light	19.	19.
Flight crew		
20. Flight crew licence/composition	20.	20.
Journey logbook/Technical log or equivalent		
21. Journey log book, or equivalent	21.	21.
22. Maintenance release	22.	22.
23. Defect notification and rectification (incl. tech log)	23.	23.
24. Pre-flight inspection	24.	24.
B. Cabin safety		
1. General internal condition	1.	1.
2. Cabin crew stations and crew rest area	2.	2.
3. First-aid kit/Emergency medical kit	3.	3.
4. Hand fire extinguishers	4.	4.
5. Life-jackets/Flotation devices	5.	5.
6. Seat belt and seat condition	6.	6.
7. Emergency exit, lighting and independent portable light	7.	7.
8. Slides/Life-rafts (as required), ELT	8.	8.
9. Oxygen supply (cabin crew and passengers)	9.	9.
10. Safety instructions	10.	10.
11. Cabin crew members	11.	11.
12. Access to emergency exits	12.	12.
13. Stowage of passenger baggage's	13.	13.
14. Seat capacity	14.	14.

Appendix IV (cont.) - Proof of Ramp Report Form

Item code	Checked	Remark
C. Aircraft condition		
1. General external condition	1.	1.
2. Doors and hatches	2.	2.
3. Flight controls	3.	3.
4. Wheels, tyres and brakes	4.	4.
5. Undercarriage skids/floats	5.	5.
6. Wheel well	6.	6.
7. Powerplant and pylon	7.	7.
8. Fan blades, propellers, rotors (main & tail)	8.	8.
9. Obvious repairs	9.	9.
10. Obvious unrepaired damage	10.	10.
11. Leakage	11.	11.
D. Cargo		
1. General condition of cargo compartment	1.	1.
2. Dangerous goods	2.	2.
3. Stowage of cargo	3.	3.
E. General		
1. General	1.	1.

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Appendix IV - Proof of Ramp Report Form

AUTHORITY REQUIREMENTS FOR AIR OPERATIONS ANNEX III (PART-ORO)

GENERAL (GEN)

SCOPE (ORO.GEN.005)

This Annex establishes requirements to be followed by an air operator conducting commercial air transport operations.

COMPETENT AUTHORITY (ORO.GEN.105)

For the purpose of this Annex, the competent authority exercising oversight over operators subject to a certification obligation shall be for operators having their principal place of business in a Member State, the authority designated by that Member State.

OPERATOR RESPONSIBILITIES (ORO.GEN.110)

a. The operator is responsible for the operation of the aircraft in accordance with Annex IV to Regulation (EC) No 216/2008, the relevant requirements of this Annex and its certificate.
b. Every flight shall be conducted in accordance with the provisions of the operations manual.
c. The operator shall establish and maintain a system for exercising operational control over any flight operated under the terms of its certificate.
d. The operator shall ensure that its aircraft are equipped and its crews are qualified as required for the area and type of operation.
e. The operator shall ensure that all personnel assigned to, or directly involved in, ground and flight operations are properly instructed, have demonstrated their abilities in their particular duties and are aware of their responsibilities and the relationship of such duties to the operation as a whole.
f. The operator shall establish procedures and instructions for the safe operation of each aircraft type, containing ground staff and crew member duties and responsibilities for all types of operation on the ground and in flight. These procedures shall not require crew members to perform any activities during critical phases of flight other than those required for the safe operation of the aircraft.
g. The operator shall ensure that all personnel are made aware that they shall comply with the laws,

regulations and procedures of those States in which operations are conducted and that are pertinent to the performance of their duties.

h. The operator shall establish a checklist system for each aircraft type to be used by crew members in all phases of flight under normal, abnormal and emergency conditions to ensure that the operating procedures in the operations manual are followed. The design and utilisation of checklists shall observe human factors principles and take into account the latest relevant documentation from the aircraft manufacturer.

i. The operator shall specify flight planning procedures to provide for the safe conduct of the flight based on considerations of aircraft performance, other operating limitations and relevant expected conditions on the route to be followed and at the aerodromes or operating sites concerned. These procedures shall be included in the operations manual.

j. The operator shall establish and maintain dangerous goods training programmes for personnel as required by the technical instructions which shall be subject to review and approval by the competent authority. Training programmes shall be commensurate with the responsibilities of personnel.

CONTINUED VALIDITY (ORO.GEN.135)

a. The operator's certificate shall remain valid subject to:
   1. The operator remaining in compliance with the relevant requirements of Regulation (EC) No 216/2008 and its Implementing Rules, taking into account the provisions related to the handling of findings as specified under ORO.GEN.150;
   2. The competent authority being granted access to the operator as defined in ORO.GEN.140 to determine continued compliance with the relevant requirements of Regulation (EC) No 216/2008 and its Implementing Rules; and
   3. The certificate not being surrendered or revoked.

b. Upon revocation or surrender the certificate shall be returned to the competent authority without delay.

PERSONNEL REQUIREMENTS (ORO.GEN.210)

a. The operator shall appoint an accountable manager, who has the authority for ensuring that all activities can be financed and carried out in accordance with the applicable requirements. The accountable manager shall be responsible for establishing and maintaining an effective management system.

b. A person or group of persons shall be nominated by the operator, with the responsibility of ensuring that the operator remains in compliance with the applicable requirements. Such person(s) shall be ultimately responsible to the accountable manager.

c. The operator shall have sufficient qualified personnel for the planned tasks and activities to be performed in accordance with the applicable requirements.

d. The operator shall maintain appropriate experience, qualification and training records to show compliance with point (c).

e. The operator shall ensure that all personnel are aware of the rules and procedures relevant to the exercise of their duties.

FACILITY REQUIREMENTS (ORO.GEN.215)

The operator shall have facilities allowing the performance and management of all planned tasks and activities in accordance with the applicable requirements.

RECORD-KEEPING (ORO.GEN.220)

a. The operator shall establish a system of record-keeping that allows adequate storage and reliable traceability of all activities developed, covering in particular all the elements indicated in ORO. GEN.200.

b. The format of the records shall be specified in the operator's procedures.

c. Records shall be stored in a manner that ensures protection from damage, alteration and theft.

AIR OPERATOR CERTIFICATION (AOC)

APPLICATION FOR AN AIR OPERATOR CERTIFICATE (ORO.AOC.100)

a. Without prejudice to Regulation (EC) No 1008/2008 of the European Parliament and the Council (1), prior to commencing commercial air operations, the operator shall apply for and obtain an air operator certificate (AOC) issued by the competent authority.

b. The operator shall provide the following information to the competent authority:
   1. The official name and business name, address, and mailing address of the applicant;
   2. A description of the proposed operation, including the type(s), and number of aircraft to be operated;
   3. A description of the management system, including organisational structure;

4. The name of the accountable manager;
5. The names of the nominated persons required by ORO.AOC.135(a) together with their qualifications and experience; and
6. A copy of the operations manual required by ORO.MLR.100.
7. A statement that all the documentation sent to the competent authority have been verified by the applicant and found in compliance with the applicable requirements.

c. Applicants shall demonstrate to the competent authority that:
1. They comply with all the applicable requirements of Annex IV to Regulation (EC) No 216/2008, this Annex and Annex IV (Part-CAT) and Annex V (Part-SPA) to this Regulation, as applicable;
2. All aircraft operated have a certificate of airworthiness (CofA) in accordance with Regulation (EC) No 1702/2003; and
3. Its organisation and management are suitable and properly matched to the scale and scope of the operation.

OPERATIONS SPECIFICATIONS AND PRIVILEGES OF AN AOC HOLDER (ORO.AOC.105)

The privileges of the operator, including those granted in accordance with Annex V (Part-SPA), shall be specified in the operations specifications of the certificate.

FLIGHT DATA MONITORING — AIRPLANES (ORO.AOC.130)

a. The operator shall establish and maintain a flight data monitoring system, which shall be integrated in its management system, for airplanes with a maximum certificated take-off mass of more than 27 000 kg.
b. The flight data monitoring system shall be non-punitive and contain adequate safeguards to protect the source(s) of the data.

PERSONNEL REQUIREMENTS (ORO.AOC.135)

a. In accordance with ORO.GEN.210(b), the operator shall nominate persons responsible for the management and supervision of the following areas:
1. Flight operations;
2. Crew training;
3. (Ground operations; and
4. Continuing airworthiness in accordance with Regulation (EC) No 2042/2003.

b. Adequacy and competency of personnel
1. The operator shall employ sufficient personnel for the planned ground and flight operations.
2. All personnel assigned to, or directly involved in, ground and flight operations shall:
i) Be properly trained;
ii) Demonstrate their capabilities in the performance of their assigned duties; and
iii) Be aware of their responsibilities and the relationship of their duties to the operation as a whole.

c. Supervision of personnel
1. The operator shall appoint a sufficient number of personnel supervisors, taking into account the structure of the operator's organisation and the number of personnel employed.
2. The duties and responsibilities of these supervisors shall be defined, and any other necessary arrangements shall be made to ensure that they can discharge their supervisory responsibilities.
3. The supervision of crew members and personnel involved in the operation shall be exercised by individuals with adequate experience and the skills to ensure the attainment of the standards specified in the operations manual.

FACILITY REQUIREMENTS (ORO.AOC.140)

In accordance with ORO.GEN.215, the operator shall:
a. Make use of appropriate ground handling facilities to ensure the safe handling of its flights;
b. Arrange operational support facilities at the main operating base, appropriate for the area and type of operation; and
c. Ensure that the available working space at each operating base is sufficient for personnel whose actions may affect the safety of flight operations. Consideration shall be given to the needs of ground crew, personnel concerned with operational control, the storage and display of essential records and flight planning by crews.

MANUALS, LOGS AND RECORDS (MLR)

MINIMUM EQUIPMENT LIST (ORO.MLR.105)

a. A minimum equipment list (MEL) shall be established as specified under 8.a.3 of Annex IV to Regulation (EC) No 216/2008, based on the relevant master minimum equipment list (MMEL) as defined in the data established in accordance with Regulation (EC) No 1702/2003.

b. The MEL and any amendment thereto shall be approved by the competent authority.

c. The operator shall amend the MEL after any applicable change to the MMEL within the acceptable timescales.

d. In addition to the list of items, the MEL shall contain:
   1. A preamble, including guidance and definitions for flight crews and maintenance personnel using the MEL;
   2. The revision status of the MMEL upon which the MEL is based and the revision status of the MEL;
   3. The scope, extent and purpose of the MEL.

e. The operator shall:
   1. Establish rectification intervals for each inoperative instrument, item of equipment or function listed in the MEL. The rectification interval in the MEL shall not be less restrictive than the corresponding rectification interval in the MMEL;
   2. Establish an effective rectification programme;
   3. Only operate the aircraft after expiry of the rectification interval specified in the MEL when:
      i. The defect has been rectified; or
      ii. The rectification interval has been extended in accordance with (f).

f. Subject to approval of the competent authority, the operator may use a procedure for the one time extension of category B, C and D rectification intervals, provided that:
   1. The extension of the rectification interval is within the scope of the MMEL for the aircraft type;
   2. The extension of the rectification interval is, as a maximum, of the same duration as the rectification interval specified in the MEL;
   3. The rectification interval extension is not used as a normal means of conducting MEL item rectification and is used only when events beyond the control of the operator have precluded rectification;
   4. A description of specific duties and responsibilities for controlling extensions is established by the operator;
   5. The competent authority is notified of any extension of the applicable rectification interval; and
   6. A plan to accomplish the rectification at the earliest opportunity is established.

g. The operator shall establish the operational and maintenance procedures referenced in the MEL taking into account the operational and maintenance procedures referenced in the MMEL. These procedures shall be part of the operator's manuals or the MEL.

h. The operator shall amend the operational and maintenance procedures referenced in the MEL after any applicable change to the operational and maintenance procedures referenced in the MMEL.

i. Unless otherwise specified in the MEL, the operator shall complete:
   1. The operational procedures referenced in the MEL when planning for and/or operating with the listed item inoperative; and
   2. The maintenance procedures referenced in the MEL prior to operating with the listed item inoperative.

j. Subject to a specific case-by-case approval by the competent authority, the operator may operate an aircraft with inoperative instruments, items of equipment or functions outside the constraints of the MEL but within the constraints of the MMEL, provided that:
   1. The concerned instruments, items of equipment or functions are within the scope of the MMEL as defined in the data established in accordance with Regulation (EC) No 1702/2003;
   2. The approval is not used as a normal means of conducting operations outside the constraints of the approved MEL and is used only when events beyond the control of the operator have precluded the MEL compliance;
   3. A description of specific duties and responsibilities for controlling the operation of the aircraft under such approval is established by the operator; and
   4. A plan to rectify the inoperative instruments, items of equipment or functions or to return operating the aircraft under the MEL constraints at the earliest opportunity is established.

TECHNICAL CREW IN HEMS, HHO OR NVIS OPERATIONS (TC)

SCOPE (ORO.TC.100)

This Subpart establishes the requirements to be met by the operator when operating an aircraft with technical crew members in commercial air transport helicopter emergency medical service (HEMS), night vision imaging system (NVIS) operations or helicopter hoist operations (HHO).

CONDITIONS FOR ASSIGNMENT TO DUTIES (ORO.TC.105)

a. Technical crew members in commercial air transport HEMS, HHO or NVIS operations shall only be assigned duties if they:
   1. Are at least 18 years of age;
   2. Are physically and mentally fit to safely discharge assigned duties and responsibilities;
   3. Have completed all applicable training required by this Subpart to perform the assigned duties;
   4. Have been checked as proficient to perform all assigned duties in accordance with the procedures specified in the operations manual.

b. Before assigning to duties technical crew members who are self-employed and/or working on a freelance or part-time basis, the operator shall verify that all applicable requirements of this Subpart are complied with, taking into account all services rendered by the technical crew member to other operator(s) to determine in particular:
   1. The total number of aircraft types and variants operated;
   2. The applicable flight and duty time limitations and rest requirements.

c. Fire and smoke training;

d. Survival training on ground and in water, appropriate to the type and area of operation;

e. Aero-medical aspects and first-aid;

f. Communication and relevant CRM elements of ORO.FC.115 and ORO.FC.215.

COMMERCIAL AIR TRANSPORT OPERATIONS ANNEX IV (PART-CAT)

GENERAL REQUIREMENTS (GEN)

TAXIING OF AIRPLANES (CAT.GEN.MPA.125)

The operator shall ensure that an airplane is only taxied on the movement area of an aerodrome if the person at the controls:

a. Is an appropriately qualified pilot; or

b. Has been designated by the operator and:
   1. Is trained to taxi the aircraft;
   2. Is trained to use the radio telephone;
   3. Has received instruction in respect of aerodrome layout, routes, signs, marking, lights, air traffic control (ATC) signals and instructions, phraseology and procedures;
   4. Is able to conform to the operational standards required for safe airplane movement at the aerodrome.

ROTOR ENGAGEMENT – HELICOPTERS (CAT.GEN.MPA.130)

A helicopter rotor shall only be turned under power for the purpose of flight with a qualified pilot at the controls.

DOCUMENTS, MANUALS AND INFORMATION TO BE CARRIED (CAT.GEN.MPA.180)

a. The following documents, manuals and information shall be carried on each flight, as originals or copies unless otherwise specified:
   1. The aircraft flight manual (AFM), or equivalent document(s);
   2. The original certificate of registration;
   3. The original certificate of airworthiness (CofA);
   4. The noise certificate, including an English translation, where one has been provided by the authority responsible for issuing the noise certificate;
   5. A certified true copy of the air operator certificate (AOC);
   6. The operations specifications relevant to the aircraft type, issued with the AOC;
   7. The original aircraft radio licence, if applicable;
   8. The third party liability insurance certificate(s);
   9. The journey log, or equivalent, for the aircraft;
   10. The aircraft technical log, in accordance with Annex I (Part-M) to Regulation (EC) No 2042/2003;

11. Details of the filed ATS flight plan, if applicable;
12. Current and suitable aeronautical charts for the route of the proposed flight and all routes along which it is reasonable to expect that the flight may be diverted;
13. Procedures and visual signals information for use by intercepting and intercepted aircraft;
14. Information concerning search and rescue services for the area of the intended flight, which shall be easily accessible in the flight crew compartment;
15. The current parts of the operations manual that are relevant to the duties of the crew members, which shall be easily accessible to the crew members;
16. The MEL;
17. Appropriate notices to airmen (NOTAMs) and aeronautical information service (AIS) briefing documentation;
18. Appropriate meteorological information;
19. Cargo and/or passenger manifests, if applicable;
20. Mass and balance documentation;
21. The operational flight plan, if applicable;
22. Notification of special categories of passenger (SCPs) and special loads, if applicable; and
23. Any other documentation that may be pertinent to the flight or is required by the States concerned with the flight.

b. Notwithstanding (a), for operations under visual flight rules (VFR) by day with other-than-complex motor-powered aircraft taking off and landing at the same aerodrome or operating site within 24 hours, or remaining within a local area specified in the operations manual, the following documents and information may be retained at the aerodrome or operating site instead:
   1. Noise certificate;
   2. Aircraft radio licence;
   3. Journey log, or equivalent;
   4. Aircraft technical log;
   5. NOTAMs and AIS briefing documentation;
   6. Meteorological information;
   7. Notification of SCPs and special loads, if applicable; and
   8. Mass and balance documentation.

c. Notwithstanding (a), in case of loss or theft of documents specified in (a)(2) to (a)(8), the operation may continue until the flight reaches its destination or a place where replacement documents can be provided.

PRESERVATION, PRODUCTION AND USE OF FLIGHT RECORDER RECORDINGS (CAT.GEN.MPA.195)

a. Following an accident or an incident that is subject to mandatory reporting, the operator of an aircraft shall preserve the original recorded data for a period of 60 days unless otherwise directed by the investigating authority.

b. The operator shall conduct operational checks and evaluations of flight data recorder (FDR) recordings, cockpit voice recorder (CVR) recordings and data link recordings to ensure the continued serviceability of the recorders.

c. The operator shall save the recordings for the period of operating time of the FDR as required by CAT. IDE.A.190 or CAT.IDE.H.190, except that, for the purpose of testing and maintaining the FDR, up to one hour of the oldest recorded material at the time of testing may be erased.

d. The operator shall keep and maintain up-to-date documentation that presents the necessary information to convert FDR raw data into parameters expressed in engineering units.

e. The operator shall make available any flight recorder recording that has been preserved, if so determined by the competent authority.

f. Without prejudice to Regulation (EU) No 996/2010 of the European Parliament and of the Council (1):
   1. CVR recordings shall only be used for purposes other than for the investigation of an accident or an incident subject to mandatory reporting, if all crew members and maintenance personnel concerned consent.
   2. FDR recordings or data link recordings shall only be used for purposes other than for the investigation of an accident or an incident which is subject to mandatory reporting, if such records are:
      i. Used by the operator for airworthiness or maintenance purposes only; or
      ii. De-identified; or
      iii. Disclosed under secure procedures.

OPERATING PROCEDURES (OP)

REFUELLING/DEFUELLING WITH PASSENGERS EMBARKING, ON BOARD OR DISEMBARKING (CAT.OP.MPA.195)

a. An aircraft shall not be refuelled/defuelled with Avgas (aviation gasoline) or wide-cut type fuel or a mixture of these types of fuel, when passengers are embarking, on board or disembarking.
b. For all other types of fuel, necessary precautions shall be taken and the aircraft shall be properly manned by qualified personnel ready to initiate and direct an evacuation of the aircraft by the most practical and expeditious means available.

REFUELLING/DEFUELLING WITH WIDE-CUT FUEL (CAT.OP.MPA.200)

Refuelling/defuelling with wide-cut fuel shall only be conducted if the operator has established appropriate procedures taking into account the high risk of using wide-cut fuel types.

PUSHBACK AND TOWING – AIRPLANES (CAT.OP.MPA.205)

Push back and towing procedures specified by the operator shall be conducted in accordance with established aviation standards and procedures.

ICE AND OTHER CONTAMINANTS – GROUND PROCEDURES (CAT.OP.MPA.250)

a. The operator shall establish procedures to be followed when ground de-icing and anti-icing and related inspections of the aircraft are necessary to allow the safe operation of the aircraft.
b. The commander shall only commence take-off if the aircraft is clear of any deposit that might adversely affect the performance or controllability of the aircraft, except as permitted under (a) and in accordance with the AFM.

ICE AND OTHER CONTAMINANTS – FLIGHT PROCEDURES (CAT.OP.MPA.255)

a. The operator shall establish procedures for flights in expected or actual icing conditions.
b. The commander shall only commence a flight or intentionally fly into expected or actual icing conditions if the aircraft is certified and equipped to cope with such conditions.
c. If icing exceeds the intensity of icing for which the aircraft is certified or if an aircraft not certified for flight in known icing conditions encounters icing, the commander shall exit the icing conditions without delay, by a change of level and/or route, if necessary by declaring an emergency to ATC.

FUEL AND OIL SUPPLY (CAT.OP.MPA.260)

The commander shall only commence a flight or continue in the event of in-flight replanning when satisfied that the aircraft carries at least the planned amount of usable fuel and oil to complete the flight safely, taking into account the expected operating conditions.

TAKE-OFF CONDITIONS (CAT.OP.MPA.265)

Before commencing take-off, the commander shall be satisfied that:

a. According to the information available to him/her, the weather at the aerodrome or operating site and the condition of the runway or FATO intended to be used would not prevent a safe take-off and departure; and
b. Established aerodrome operating minima will be complied with.

AIRCRAFT PERFORMANCE AND OPERATING LIMITATIONS (POL)

MASS AND BALANCE, LOADING (CAT.POL.MAB.100)

a. During any phase of operation, the loading, mass and centre of gravity (CG) of the aircraft shall comply with the limitations specified in the AFM, or the operations manual if more restrictive.
b. The operator shall establish the mass and the CG of any aircraft by actual weighing prior to initial entry into service and thereafter at intervals of four years if individual aircraft masses are used, or nine years if fleet masses are used. The accumulated effects of modifications and repairs on the mass and balance shall be accounted for and properly documented. Aircraft shall be reweighed if the effect of modifications on the mass and balance is not accurately known.
c. The weighing shall be accomplished by the manufacturer of the aircraft or by an approved maintenance organisation.
d. The operator shall determine the mass of all operating items and crew members included in the aircraft dry operating mass by weighing or by using standard masses. The influence of their position on the aircraft's CG shall be determined.

e. The operator shall establish the mass of the traffic load, including any ballast, by actual weighing or by determining the mass of the traffic load in accordance with standard passenger and baggage masses.
f. In addition to standard masses for passengers and checked baggage, the operator can use standard masses for other load items, if it demonstrates to the competent authority that these items have the same mass or that their masses are within specified tolerances.
g. The operator shall determine the mass of the fuel load by using the actual density or, if not known, the density calculated in accordance with a method specified in the operations manual.
h. The operator shall ensure that the loading of:
    1. Its aircraft is performed under the supervision of qualified personnel; and
    2. Traffic load is consistent with the data used for the calculation of the aircraft mass and balance.
i. The operator shall comply with additional structural limits such as the floor strength limitations, the maximum load per running metre, the maximum mass per cargo compartment and the maximum seating limit. For helicopters, in addition, the operator shall take account of in-flight changes in loading.
j. The operator shall specify, in the operations manual, the principles and methods involved in the loading and in the mass and balance system that meet the requirements contained in (a) to (i). This system shall cover all types of intended operations.

MASS AND BALANCE DATA AND DOCUMENTATION (CAT.POL.MAB.105)

a. The operator shall establish mass and balance data and produce mass and balance documentation prior to each flight specifying the load and its distribution. The mass and balance documentation shall enable the commander to determine that the load and its distribution is such that the mass and balance limits of the aircraft are not exceeded. The mass and balance documentation shall contain the following information:
    1. Aircraft registration and type;
    2. Flight identification, number and date;
    3. Name of the commander;
    4. Name of the person who prepared the document;
    5. Dry operating mass and the corresponding CG of the aircraft:
        i. for performance class B airplanes and for helicopters the CG position may not need to be on the mass and balance documentation if, for example, the load distribution is in accordance with a pre-calculated balance table or if it can be shown that for the planned operations a correct balance can be ensured, whatever the real load is;
    6. Mass of the fuel at take-off and the mass of trip fuel;
    7. Mass of consumables other than fuel, if applicable;
    8. Load components including passengers, baggage, freight and ballast;
    9. Take-off mass, landing mass and zero fuel mass;
    10. Applicable aircraft CG positions; and
    11. The limiting mass and CG values.

The information above shall be available in flight planning documents or mass and balance systems. Some of this information may be contained in other documents readily available for use.

b. Where mass and balance data and documentation is generated by a computerised mass and balance system, the operator shall verify the integrity of the output data.
c. The person supervising the loading of the aircraft shall confirm by hand signature or equivalent that the load and its distribution are in accordance with the mass and balance documentation given to the commander. The commander shall indicate his/her acceptance by hand signature or equivalent.
d. The operator shall specify procedures for last minute changes to the load to ensure that:
    1. Any last minute change after the completion of the mass and balance documentation is brought to the attention of the commander and entered in the flight planning documents containing the mass and balance documentation;
    2. The maximum last minute change allowed in passenger numbers or hold load is specified; and
    3. New mass and balance documentation is prepared if this maximum number is exceeded.
e. The operator shall obtain approval by the competent authority if he/she wishes to use an onboard integrated mass and balance computer system or a stand-alone computerised mass and balance system as a primary source for dispatch. The operator shall demonstrate the accuracy and reliability of that system.

INSTRUMENT DATA EQUIPMENT (IDE)

INSTRUMENTS AND EQUIPMENT – GENERAL (CAT.IDE.A.100)

a) Instruments and equipment required by this Subpart shall be approved in accordance with Regulation (EC) No 1702/2003, except for the following items:
   1. Spare fuses;
   2. Independent portable lights;
   3. An accurate time piece;
   4. Chart holder;
   5. First-aid kits;
   6. Emergency medical kit;
   7. Megaphones;
   8. Survival and signaling equipment;
   9. Sea anchors and equipment for mooring; and
   10. Child restraint devices.

b) Instruments and equipment not required by this Subpart that do not need to be approved in accordance with Regulation (EC) No 1702/2003, but are carried on a flight, shall comply with the following:
   1. The information provided by these instruments, equipment or accessories shall not be used by the flight crew to comply with Annex I to Regulation (EC) No 216/2008 or CAT.IDE.A.330, CAT.IDE.A.335, CAT.IDE.A.340 and CAT.IDE.A.345; and
   2. The instruments and equipment shall not affect the airworthiness of the airplane, even in the case of failures or malfunction.

c) If equipment is to be used by one flight crew member at his/her station during flight, it must be readily operable from that station. When a single item of equipment is required to be operated by more than one flight crew member it must be installed so that the equipment is readily operable from any station at which the equipment is required to be operated.

d) Those instruments that are used by any flight crew member shall be so arranged as to permit the flight crew member to see the indications readily from his/her station, with the minimum practicable deviation from the position and line of vision that he/she normally assumes when looking forward along the flight path.

e) All required emergency equipment shall be easily accessible for immediate use.

MINIMUM EQUIPMENT FOR FLIGHT (CAT.IDE.A.105)

A flight shall not be commenced when any of the airplane's instruments, items of equipment or functions required for the intended flight are inoperative or missing, unless:

a. The airplane is operated in accordance with the operator's MEL; or
b. The operator is approved by the competent authority to operate the airplane within the constraints of the master minimum equipment list (MMEL).

SPARE ELECTRICAL FUSES (CAT.IDE.A.110)

a. Airplanes shall be equipped with spare electrical fuses, of the ratings required for complete circuit protection, for replacement of those fuses that are allowed to be replaced in flight.
b. The number of spare fuses that are required to be carried shall be the higher of:
   1. 10 % of the number of fuses of each rating; or
   2. Three fuses for each rating.

OPERATING LIGHTS (CAT.IDE.A.115)

a. Airplanes operated by day shall be equipped with:
   1. An anti-collision light system;
   2. Lighting supplied from the airplane's electrical system to provide adequate illumination for all instruments and equipment essential to the safe operation of the airplane;
   3. Lighting supplied from the airplane's electrical system to provide illumination in all passenger compartments; and
   4. An independent portable light for each required crew member readily accessible to crew members when seated at their designated stations.
b. Airplanes operated at night shall in addition be equipped with:
   1. Navigation/position lights;
   2. Two landing lights or a single light having two separately energised filaments; and
   3. Lights to conform with the International Regulations for Preventing Collisions at Sea if the airplane is operated as a seaplane.

EQUIPMENT TO CLEAR WINDSHIELD (CAT.IDE.A.120)

Airplanes with an MCTOM of more than 5 700 kg shall be equipped at each pilot station with a means to maintain a clear portion of the windshield during precipitation.

OPERATIONS UNDER VFR BY DAY – FLIGHT AND NAVIGATIONAL INSTRUMENTS AND ASSOCIATED EQUIPMENT (CAT.IDE.A.125)

a. Airplanes operated under VFR by day shall be equipped with the following equipment, available at the pilot's station:
   1. A means of measuring and displaying:
      i. Magnetic heading;
      ii. Time in hours, minutes, and seconds;
      iii. Pressure altitude;
      iv. Indicated airspeed;
      v. Vertical speed;
      vi. Turn and slip;
      vii. Attitude;
      viii. Heading;
      ix. Outside air temperature; and
      x. Mach number whenever speed limitations are expressed in terms of Mach number.
   2. A means of indicating when the supply of power to the required flight instruments is not adequate.

b. Whenever two pilots are required for the operation, an additional separate means of displaying the following shall be available for the second pilot:
   1. Pressure altitude;
   2. Indicated airspeed;
   3. Vertical speed;
   4. Turn and slip;
   5. Attitude; and
   6. Heading.

c. A means for preventing malfunction of the airspeed indicating systems due to condensation or icing shall be available for:
   1. Airplanes with an MCTOM of more than 5 700 kg or an MOPSC of more than nine; and
   2. Airplanes first issued with an individual CofA on or after 1 April 1999.

d. Single engine airplanes first issued with an individual CofA before 22 May 1995 are exempted from the requirements of (a)(1)(vi), (a)(1)(vii), (a)(1)(viii) and (a)(1)(ix) if the compliance would require retrofitting.

OPERATIONS UNDER IFR OR AT NIGHT – FLIGHT AND NAVIGATIONAL INSTRUMENTS AND ASSOCIATED EQUIPMENT (CAT.IDE.A.130)

Airplanes operated under VFR at night or under IFR shall be equipped with the following equipment, available at the pilot's station:

a. A means of measuring and displaying:
   1. Magnetic heading;
   2. Time in hours, minutes and seconds;
   3. Indicated airspeed;
   4. Vertical speed;
   5. Turn and slip, or in the case of airplanes equipped with a standby means of measuring and displaying attitude, slip;
   6. Attitude;
   7. Stabilised heading;
   8. Outside air temperature; and
   9. Mach number whenever speed limitations are expressed in terms of Mach number.

b. Two means of measuring and displaying pressure altitude.

c. A means of indicating when the supply of power to the required flight instruments is not adequate.

d. A means for preventing malfunction of the airspeed indicating systems required in (a)(3) and (h)(2) due to condensation or icing.

e. A means of annunciating to the flight crew the failure of the means required in (d) for airplanes:
   1. Issued with an individual CofA on or after 1 April 1998; or
   2. Issued with an individual CofA before 1 April 1998 with an MCTOM of more than 5 700 kg, and with an MOPSC of more than nine.

f. Except for propeller-driven airplanes with an MCTOM of 5 700 kg or less, two independent static pressure systems.

g. One static pressure system and one alternate source of static pressure for propeller-driven airplanes with an MCTOM of 5 700 kg or less.

h. Whenever two pilots are required for the operation, a separate means of displaying for the second pilot:
   1. Pressure altitude;
   2. Indicated airspeed;
   3. Vertical speed;
   4. Turn and slip;
   5. Attitude; and
   6. Stabilised heading.

i. A standby means of measuring and displaying attitude capable of being used from either pilot's station for airplanes with an MCTOM of more than 5 700 kg or an MOPSC of more than nine that:
   1. Is powered continuously during normal operation and, after a total failure of the normal electrical generating system, is powered from a source independent from the normal electrical generating system;
   2. Provides reliable operation for a minimum of 30 minutes after total failure of the normal electrical generating system, taking into account other loads on the emergency power supply and operational procedures;
   3. Operates independently of any other means of measuring and displaying attitude;
   4. Is operative automatically after total failure of the normal electrical generating system;
   5. Is appropriately illuminated during all phases of operation, except for airplanes with an MCTOM of 5 700 kg or less, already registered in a Member State on 1 April 1995 and equipped with a standby attitude indicator in the left hand instrument panel;
   6. Is clearly evident to the flight crew when the standby attitude indicator is being operated by emergency power; and
   7. Where the standby attitude indicator has its own dedicated power supply, has an associated indication, either on the instrument or on the instrument panel, when this supply is in use.

j. A chart holder in an easily readable position that can be illuminated for night operations.

ADDITIONAL EQUIPMENT FOR SINGLE PILOT OPERATION UNDER IFR (CAT.IDE.A.135)

Airplanes operated under IFR with a single-pilot shall be equipped with an autopilot with at least altitude hold and heading mode.

ALTITUDE ALERTING SYSTEM (CAT.IDE.A.140)

a. The following airplanes shall be equipped with an altitude alerting system:
   1. Turbine propeller powered airplanes with an MCTOM of more than 5 700 kg or having an MOPSC of more than nine; and
   2. Airplanes powered by turbo-jet engines.

b. The altitude alerting system shall be capable of:
   1. Alerting the flight crew when approaching a preselected altitude; and
   2. Alerting the flight crew by at least an aural signal, when deviating from a preselected altitude.

c. Notwithstanding (a), airplanes with an MCTOM of 5 700 kg or less, having an MOPSC of more than nine, first issued with an individual CofA before 1 April 1972 and already registered in a Member State on 1 April 1995 are exempted from being equipped with an altitude alerting system.

TERRAIN AWARENESS WARNING SYSTEM (TAWS) (CAT.IDE.A.150)

a. Turbine-powered airplanes having an MCTOM of more than 5 700 kg or an MOPSC of more than nine shall be equipped with a TAWS that meets the requirements for Class A equipment as specified in an acceptable standard.

b. Reciprocating-engine-powered airplanes with an MCTOM of more than 5 700 kg or an MOPSC of more than nine shall be equipped with a TAWS that meets the requirement for Class B equipment as specified in an acceptable standard.

AIRBORNE COLLISION AVOIDANCE SYSTEM (ACAS) (CAT.IDE.A.155)

Unless otherwise provided for by Regulation (EU) No 1332/2011, turbine-powered airplanes with an MCTOM of more than 5 700 kg or an MOPSC of more than 19 shall be equipped with ACAS II.

AIRBORNE WEATHER DETECTING EQUIPMENT (CAT.IDE.A.160)

The following shall be equipped with airborne weather detecting equipment when operated at night or in IMC in areas where thunderstorms or other potentially hazardous weather conditions, regarded as detectable with airborne weather detecting equipment, may be expected to exist along the route:

a. Pressurised airplanes;

b. Non-pressurised airplanes with an MCTOM of more than 5 700 kg; and

c. Non-pressurised airplanes with an MOPSC of more than nine.

ADDITIONAL EQUIPMENT FOR OPERATIONS IN ICING CONDITIONS AT NIGHT (CAT.IDE.A.165)

a. Airplanes operated in expected or actual icing conditions at night shall be equipped with a means to illuminate or detect the formation of ice.
b. The means to illuminate the formation of ice shall not cause glare or reflection that would handicap crew members in the performance of their duties.

FLIGHT CREW INTERPHONE SYSTEM (CAT.IDE.A.170)

Airplanes operated by more than one flight crew member shall be equipped with a flight crew interphone system, including headsets and microphones for use by all flight crew members.

CREW MEMBER INTERPHONE SYSTEM (CAT.IDE.A.175)

Airplanes with an MCTOM of more than 15 000 kg, or with an MOPSC of more than 19 shall be equipped with a crew member interphone system, except for airplanes first issued with an individual CofA before 1 April 1965 and already registered in a Member State on 1 April 1995.

PUBLIC ADDRESS SYSTEM (CAT.IDE.A.180)

Airplanes with an MOPSC of more than 19 shall be equipped with a public address system.

COCKPIT VOICE RECORDER (CAT.IDE.A.185)

a. The following airplanes shall be equipped with a cockpit voice recorder (CVR):
    1. Airplanes with an MCTOM of more than 5 700 kg; and
    2. Multi-engined turbine-powered airplanes with an MCTOM of 5 700 kg or less, with an MOPSC of more than nine and first issued with an individual CofA on or after 1 January 1990.
b. The CVR shall be capable of retaining the data recorded during at least:
    1. The preceding two hours in the case of airplanes referred to in (a)(1) when the individual CofA has been issued on or after 1 April 1998;
    2. The preceding 30 minutes for airplanes referred to in (a)(1) when the individual CofA has been issued before 1 April 1998; or
    3. The preceding 30 minutes, in the case of airplanes referred to in (a)(2).
c. The CVR shall record with reference to a timescale:
    1. Voice communications transmitted from or received in the flight crew compartment by radio;
    2. Flight crew members' voice communications using the interphone system and the public address system, if installed;
    3. The aural environment of the flight crew compartment, including without interruption:
        i. For airplanes first issued with an individual CofA on or after 1 April 1998, the audio signals received from each boom and mask microphone in use;
        ii. For airplanes referred to in (a)(2) and first issued with an individual CofA before 1 April 1998, the audio signals received from each boom and mask microphone, where practicable; and
    4. Voice or audio signals identifying navigation or approach aids introduced into a headset or speaker.
d. The CVR shall start to record prior to the airplane moving under its own power and shall continue to record until the termination of the flight when the airplane is no longer capable of moving under its own power. In addition, in the case of airplanes issued with an individual CofA on or after 1 April 1998, the CVR shall start automatically to record prior to the airplane moving under its own power and continue to record until the termination of the flight when the airplane is no longer capable of moving under its own power.
e. In addition to (d), depending on the availability of electrical power, the CVR shall start to record as early as possible during the cockpit checks prior to engine start at the beginning of the flight until the cockpit checks immediately following engine shutdown at the end of the flight, in the case of:
    1. Airplanes referred to in (a)(1) and issued with an individual CofA after 1 April 1998; or
    2. Airplanes referred to in (a)(2).
f. The CVR shall have a device to assist in locating it in water.

FLIGHT DATA RECORDER (CAT.IDE.A.190)

a. The following airplanes shall be equipped with a flight data recorder (FDR) that uses a digital method of recording and storing data and for which a method of readily retrieving that data from the storage medium is available:
   1. Airplanes with an MCTOM of more than 5 700 kg and first issued with an individual CofA on or after 1 June 1990;
   2. Turbine-engined airplanes with an MCTOM of more than 5 700 kg and first issued with an individual CofA before 1 June 1990; and
   3. Multi-engined turbine-powered airplanes with an MCTOM of 5 700 kg or less, with an MOPSC of more than nine and first issued with an individual CofA on or after 1 April 1998.

b. The FDR shall record:
   1. Time, altitude, airspeed, normal acceleration and heading and be capable of retaining the data recorded during at least the preceding 25 hours for airplanes referred to in (a)(2) with an MCTOM of less than 27 000 kg;
   2. The parameters required to determine accurately the airplane flight path, speed, attitude, engine power and configuration of lift and drag devices and be capable of retaining the data recorded during at least the preceding 25 hours, for airplanes referred to in (a)(1) with an MCTOM of less than 27 000 kg and first issued with an individual CofA before 1 January 2016;
   3. The parameters required to determine accurately the airplane flight path, speed, attitude, engine power, configuration and operation and be capable of retaining the data recorded during at least the preceding 25 hours, for airplanes referred to in (a)(1) and (a)(2) with an MCTOM of over 27 000 kg and first issued with an individual CofA before 1 January 2016;
   4. The parameters required to determine accurately the airplane flight path, speed, attitude, engine power and configuration of lift and drag devices and be capable of retaining the data recorded during at least the preceding 10 hours, in the case of airplanes referred to in (a)(3) and first issued with an individual CofA before 1 January 2016; or
   5. The parameters required to determine accurately the airplane flight path, speed, attitude, engine power, configuration and operation and be capable of retaining the data recorded during at least the preceding 25 hours, for airplanes referred to in (a)(1) and (a)(3) and first issued with an individual CofA on or after 1 January 2016.

c. Data shall be obtained from airplane sources that enable accurate correlation with information displayed to the flight crew.

d. The FDR shall start to record the data prior to the airplane being capable of moving under its own power and shall stop after the airplane is incapable of moving under its own power. In addition, in the case of airplanes issued with an individual CofA on or after 1 April 1998, the FDR shall start automatically to record the data prior to the airplane being capable of moving under its own power and shall stop automatically after the airplane is incapable of moving under its own ower.

e. The FDR shall have a device to assist in locating it in water.

DATA LINK RECORDING (CAT.IDE.A.195)

a. Airplanes first issued with an individual CofA on or after 8 April 2014 that have the capability to operate data link communications and are required to be equipped with a CVR, shall record on a recorder, where applicable:
   1. Data link communication messages related to ATS communications to and from the airplane, including messages applying to the following applications:
      i. Data link initiation;
      ii. Controller-pilot communication;
      iii. Addressed surveillance;
      iv. Flight information;
      v. As far as is practicable, given the architecture of the system, aircraft broadcast surveillance;
      vi. As far as is practicable, given the architecture of the system, aircraft operational control data; and
      vii. As far as is practicable, given the architecture of the system, graphics;
   2. Information that enables correlation to any associated records related to data link communications and stored separately from the airplane; and
   3. Information on the time and priority of data link communications messages, taking into account the system's architecture.

b. The recorder shall use a digital method of recording and storing data and information and a method for retrieving that data. The recording method shall allow

the data to match the data recorded on the ground.

c. The recorder shall be capable of retaining data recorded for at least the same duration as set out for CVRs in CAT.IDE.A.185.
d. The recorder shall have a device to assist in locating it in water.
e. The requirements applicable to the start and stop logic of the recorder are the same as the requirements applicable to the start and stop logic of the CVR contained in CAT.IDE.A.185(d) and (e).

COMBINATION RECORDER (CAT.IDE.A.200)

Compliance with CVR and FDR requirements may be achieved by:

a. One flight data and cockpit voice combination recorder in the case of airplanes required to be equipped with a CVR or an FDR;
b. One flight data and cockpit voice combination recorder in the case of airplanes with an MCTOM of 5 700 kg or less and required to be equipped with a CVR and an FDR; or
c. Two flight data and cockpit voice combination recorders in the case of airplanes with an MCTOM of more than 5 700 kg and required to be equipped with a CVR and an FDR.

SEATS, SEAT SAFETY BELTS, RESTRAINT SYSTEMS AND CHILD RESTRAINT DEVICES (CAT.IDE.A.205)

a. Airplanes shall be equipped with:
    1. A seat or berth for each person on board who is aged 24 months or more;
    2. A seat belt on each passenger seat and restraining belts for each berth except as specified in (3);
    3. A seat belt with upper torso restraint system on each passenger seat and restraining belts on each berth in the case of airplanes with an MCTOM of less than 5 700 kg and with an MOPSC of less than nine, after 8 April 2015;
    4. A child restraint device (CRD) for each person on board younger than 24 months;
    5. A seat belt with upper torso restraint system incorporating a device that will automatically restrain the occupant's torso in the event of rapid deceleration:
        i. On each flight crew seat and on any seat alongside a pilot's seat;
        ii. On each observer seat located in the flight crew compartment;
    6. A seat belt with upper torso restraint system on each seat for the minimum required cabin crew.
b. A seat belt with upper torso restraint system shall:
    1. Have a single point release;
    2. On flight crew seats, on any seat alongside a pilot's seat and on the seats for the minimum required cabin crew, include two shoulder straps and a seat belt that may be used independently.

FASTEN SEAT BELT AND NO SMOKING SIGNS (CAT.IDE.A.210)

Airplanes in which not all passenger seats are visible from the flight crew seat(s) shall be equipped with a means of indicating to all passengers and cabin crew when seat belts shall be fastened and when smoking is not allowed.

INTERNAL DOORS AND CURTAINS (CAT.IDE.A.215)

Airplanes shall be equipped with:

a. In the case of airplanes with an MOPSC of more than 19, a door between the passenger compartment and the flight crew compartment, with a placard indicating 'crew only' and a locking means to prevent passengers from opening it without the permission of a member of the flight crew;
b. A readily accessible means for opening each door that separates a passenger compartment from another compartment that has emergency exits;
c. A means for securing in the open position any doorway or curtain separating the passenger compartment from other areas that need to be accessed to reach any required emergency exit from any passenger seat;
d. A placard on each internal door or adjacent to a curtain that is the means of access to a passenger emergency exit, to indicate that it must be secured open during take-off and landing; and
e. A means for any member of the crew to unlock any door that is normally accessible to passengers and that can be locked by passengers.

FIRST-AID KIT (CAT.IDE.A.220)

a) Airplanes shall be equipped with first-aid kits, in accordance with ***Table 4-1***.

TABLE 4-1

Number of Passenger Seats Installed	Number of First-Aid Kits Required
0-100	1
101-200	2
201-300	3
301-400	4
401-500	5
501 or more	6

b. First-aid kits shall be:
   1. Readily accessible for use; and
   2. Kept up to date.

EMERGENCY MEDICAL KIT (CAT.IDE.A.225)

a. Airplanes with an MOPSC of more than 30 shall be equipped with an emergency medical kit when any point on the planned route is more than 60 minutes flying time at normal cruising speed from an aerodrome at which qualified medical assistance could be expected to be available.
b. The commander shall ensure that drugs are only administered by appropriately qualified persons.
c. The emergency medical kit referred to in (a) shall be:
   1. Dust and moisture proof;
   2. Carried in a way that prevents unauthorised access; and
   3. Kept up to date.

FIRST-AID OXYGEN (CAT.IDE.A.230)

a. Pressurised airplanes operated at pressure altitudes above 25 000 ft, in the case of operations for which a cabin crew member is required, shall be equipped with a supply of undiluted oxygen for passengers who, for physiological reasons, might require oxygen following a cabin depressurisation.
b. The oxygen supply referred to in (a) shall be calculated using an average flow rate of at least 3 litres standard temperature pressure dry (STPD)/minute/person. This oxygen supply shall be sufficient for the remainder of the flight after cabin depressurisation when the cabin altitude exceeds 8 000 ft but does not exceed 15 000 ft, for at least 2 % of the passengers carried, but in no case for less than one person.
c. There shall be a sufficient number of dispensing units, but in no case less than two, with a means for cabin crew to use the supply.
d. The first-aid oxygen equipment shall be capable of generating a mass flow to each user of at least 4 litres STPD per minute.

SUPPLEMENTAL OXYGEN – PRESSURIZED AIRPLANES (CAT.IDE.A.235)

a. Pressurised airplanes operated at pressure altitudes above 10 000 ft shall be equipped with supplemental oxygen equipment that is capable of storing and dispensing the oxygen supplies in accordance with ***Table 4-2***.
b. Pressurised airplanes operated at pressure altitudes above 25 000 ft shall be equipped with:
   1. Quick donning types of masks for flight crew members;
   2. Sufficient spare outlets and masks or portable oxygen units with masks distributed evenly throughout the passenger compartment, to ensure immediate availability of oxygen for use by each required cabin crew member;
   3. An oxygen dispensing unit connected to oxygen supply terminals immediately available to each cabin crew member, additional crew member and occupants of passenger seats, wherever seated; and
   4. A device to provide a warning indication to the flight crew of any loss of pressurisation.
c. In the case of pressurised airplanes first issued with an individual CofA after 8 November 1998 and operated at pressure altitudes above 25 000 ft, or operated at pressure altitudes at, or below 25 000 ft under conditions that would not allow them to descend safely to 13 000 ft within four minutes, the individual oxygen dispensing units referred to in (b)(3) shall be automatically deployable.
d. The total number of dispensing units and outlets referred to in (b)(3) and (c) shall exceed the number of seats by at least 10%. The extra units shall be evenly distributed throughout the passenger compartment.
e. Notwithstanding (a), the oxygen supply requirements for cabin crew member(s), additional crew member(s) and passenger(s), in the case of airplanes not certified to fly at altitudes above 25 000 ft, may be reduced to the entire flying time between 10 000 ft and 13 000 ft cabin pressure altitudes for all

required cabin crew members and for at least 10% of the passengers if, at all points along the route to be flown, the airplane is able to descend safely within four minutes to a cabin pressure altitude of 13 000 ft.

f. The required minimum supply in ***Table 4-2***, row 1 item (b)(1) and row 2, shall cover the quantity of oxygen necessary for a constant rate of descent from the airplane's maximum certified operating altitude to 10 000 ft in 10 minutes and followed by 20 minutes at 10 000 ft.

g. The required minimum supply in ***Table 4-2*** row 1 item 1(b)(2), shall cover the quantity of oxygen necessary for a constant rate of descent from the airplane's maximum certified operating altitude to 10 000 ft in 10 minutes followed by 110 minutes at 10 000 ft.

h. The required minimum supply in ***Table 4-2***, row 3, shall cover the quantity of oxygen necessary for a constant rate of descent from the airplane's maximum certified operating altitude to 15 000 ft in 10 minutes.

TABLE 4-2

Oxygen Minimum Requirements for Pressurized Airplanes	
Supply for	Duration and Cabin Pressure Altitude
Occupants of flight crew compartment seats on flight crew compartment duty	The entire flying time when the cabin pressure altitude exceeds 13 000 ft. The remainder of the flying time when the cabin pressure altitude exceeds 10 000 ft but does not exceed 13 000 ft, after the initial 30 minutes at these altitudes, but in no case less than: 30 minutes' supply for airplanes certified to fly at altitudes not exceeding 25 000 ft; and 2 hours' supply for airplanes certified to fly at altitudes of more than 25 000 ft.
Required cabin crew members	The entire flying time when the cabin pressure altitude exceeds 13 000 ft, but not less than 30 minutes' supply. The remainder of the flying time when the cabin pressure altitude exceeds 10 000 ft but does not exceed 13 000 ft, after the initial 30 minutes at these altitudes.
100 % of passengers (*)	The entire flying time when the cabin pressure altitude exceeds 15 000 ft, but in no case less than 10 minutes' supply.
30 % of passengers (*)	The entire flying time when the cabin pressure altitude exceeds 14 000 ft but does not exceed 15 000 ft.
30 % of passengers (*)	The remainder of the flying time when the cabin pressure altitude exceeds 10 000 ft but does not exceed 14 000 ft, after the initial 30 minutes at these altitudes.

(*) Passenger numbers in Table 4-2 refer to passengers actually carried on board, including persons younger than 24 months.

SUPPLEMENTAL OXYGEN – NON-PRESSURIZED AIRPLANES (CAT.IDE.A.240)

Non-pressurised airplanes operated at pressure altitudes above 10 000 ft shall be equipped with supplemental oxygen equipment capable of storing and dispensing the oxygen supplies in accordance with ***Table 4-3***.

TABLE 4-3

Oxygen Minimum Requirements for Non-Pressurized Airplanes	
Supply for	Duration and Cabin Pressure Altitude
1. Occupants of flight crew compartment seats on flight crew compartment duty and crew members assisting flight crew in their duties	The entire flying time when at pressure altitudes above 10 000 ft.
2. Required cabin crew members	The entire flying time at pressure altitudes above 13 000 ft and for any period exceeding 30 minutes at pressure altitudes above 10 000 ft but not exceeding 13 000 ft.
3. Additional crew members and 100 % of passengers (*)	The entire flying time at pressure altitudes above 13 000 ft.
4. 10 % of passengers (*)	The entire flying time after 30 minutes at pressure altitudes above 10 000 ft but not exceeding 13 000 ft.

(*) Passenger numbers in Table 4-3 refer to passengers actually carried on board, including persons younger than 24 months.

CREW PROTECTIVE BREATHING EQUIPMENT (CAT.IDE.A.245)

a. All pressurised airplanes and those unpressurised airplanes with an MCTOM of more than 5 700 kg or having an MOPSC of more than 19 seats shall be equipped with protective breathing equipment (PBE) to protect the eyes, nose and mouth and to provide for a period of at least 15 minutes:
   1. Oxygen for each flight crew member on duty in the flight crew compartment;
   2. Breathing gas for each required cabin crew member, adjacent to his/her assigned station; and
   3. Breathing gas from a portable PBE for one member of the flight crew, adjacent to his/her assigned station, in the case of airplanes operated with a flight crew of more than one and no cabin crew member.

b. A PBE intended for flight crew use shall be installed in the flight crew compartment and be accessible for immediate use by each required flight crew member at his/her assigned station.

c. A PBE intended for cabin crew use shall be installed adjacent to each required cabin crew member station.

d. Airplanes shall be equipped with an additional portable PBE installed adjacent to the hand fire extinguisher referred to in CAT.IDE.A.250, or adjacent to the entrance of the cargo compartment, in case the hand fire extinguisher is installed in a cargo compartment.

e. A PBE while in use shall not prevent the use of the means of communication referred to in CAT.IDE.A.170, CAT.IDE.A.175, CAT.IDE.A.270 and CAT.IDE.A.330.

HAND FIRE EXTINGUISHERS (CAT.IDE.A.250)

a. Airplanes shall be equipped with at least one hand fire extinguisher in the flight crew compartment.

b. At least one hand fire extinguisher shall be located in, or readily accessible for use in, each galley not located on the main passenger compartment.

c. At least one hand fire extinguisher shall be available for use in each class A or class B cargo or baggage compartment and in each class E cargo compartment that is accessible to crew members in flight.

d. The type and quantity of extinguishing agent for the required fire extinguishers shall be suitable for the type of fire likely to occur in the compartment where the extinguisher is intended to be used and to minimise the hazard of toxic gas concentration in compartments occupied by persons.

e. Airplanes shall be equipped with at least a number of hand fire extinguishers in accordance with ***Table 4-4***, conveniently located to provide adequate availability for use in each passenger compartment.

TABLE 4-4

Number of Hand Fire Extinguishers	
MOPSC	Number of Extinguishers
7-30	1
31-60	2
61-200	3
201-300	4
301-400	5
401-500	6
501-600	7
601 or more	8

CRASH AXE AND CROWBAR (CAT.IDE.A.255)

a) Airplanes with an MCTOM of more than 5 700 kg or with an MOPSC of more than nine shall be equipped with at least one crash axe or crowbar located in the flight crew compartment.

b) In the case of airplanes with an MOPSC of more than 200, an additional crash axe or crowbar shall be installed in or near the rearmost galley area.

c) Crash axes and crowbars located in the passenger compartment shall not be visible to passengers.

MARKING OF BREAK-IN POINTS (CAT.IDE.A.260)

If areas of the airplane's fuselage suitable for break-in by rescue crews in an emergency are marked, such areas shall be marked as shown in ***Figure 4-1***.

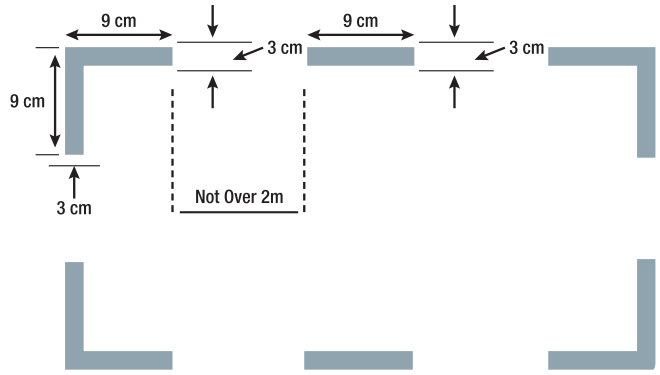

Figure 4-1. Specifications for marking break-in area on the outside of the aircraft for rescue crew identification.

MEANS FOR EMERGENCY EVACUATION (CAT.IDE.A.265)

a. Airplanes with passenger emergency exit sill heights of more than 1,83 m (6 ft) above the ground shall be equipped at each of those exits with a means to enable passengers and crew to reach the ground safely in an emergency.

b. Notwithstanding (a), such means are not required at overwing exits if the designated place on the airplane structure at which the escape route terminates is less than 1,83 m (6 ft) from the ground with the airplane on the ground, the landing gear extended, and the flaps in the take-off or landing position, whichever flap position is higher from the ground.

c. Airplanes required to have a separate emergency exit for the flight crew for which the lowest point of the emergency exit is more than 1,83 m (6 ft) above the ground shall have a means to assist all flight crew members in descending to reach the ground safely in an emergency.

d. The heights referred to in (a) and (c) shall be measured:
   1. With the landing gear extended; and
   2. After the collapse of, or failure to extend of, one or more legs of the landing gear, in the case of airplanes with a type certificate issued after 31 March 2000.

MEGAPHONES (CAT.IDE.A.270)

Airplanes with an MOPSC of more than 60 and carrying at least one passenger shall be equipped with the following quantities of portable battery-powered megaphones readily accessible for use by crew members during an emergency evacuation ***(Table 4-5)***:

a. For each passenger deck:

TABLE 4-5

Number of Megaphones	
Passenger Seating Configuration	Number of Megaphones
61-99	1
100 or more	2

b. For airplanes with more than one passenger deck, in all cases when the total passenger seating configuration is more than 60, at least one megaphone.

EMERGENCY LIGHTING AND MARKING (CAT.IDE.A.275)

a. Airplanes with an MOPSC of more than nine shall be equipped with an emergency lighting system having an independent power supply to facilitate the evacuation of the airplane.

b. In the case of airplanes with an MOPSC of more than 19, the emergency lighting system, referred to in (a) shall include:
   1. Sources of general cabin illumination;
   2. Internal lighting in floor level emergency exit areas;
   3. Illuminated emergency exit marking and locating signs;
   4. In the case of airplanes for which the application for the type certificate or equivalent was filed before 1 May 1972, when operated by night, exterior emergency lighting at all overwing exits and at exits where descent assist means are required;
   5. In the case of airplanes for which the application for the type certificate or equivalent was filed after 30 April 1972, when operated by night, exterior emergency lighting at all passenger emergency exits; and
   6. In the case of airplanes for which the type certificate was first issued on or after 31 December 1957, floor proximity emergency escape path marking system(s) in the passenger compartments.

c. In the case of airplanes with an MOPSC of 19 or less and type certified on the basis of the Agency's airworthiness codes, the emergency lighting system, referred to in (a) shall include the equipment referred to in (b)(1) to (3).
d. In the case of airplanes with an MOPSC of 19 or less that are not certified on the basis of the Agency's airworthiness codes, the emergency lighting system, referred to in (a) shall include the equipment referred to in (b)(1).
e. Airplanes with an MOPSC of nine or less, operated at night, shall be equipped with a source of general cabin illumination to facilitate the evacuation of the airplane.

EMERGENCY LOCATOR TRANSMITTER (ELT) (CAT.IDE.A.280)

a. Airplanes with an MOPSC of more than 19 shall be equipped with at least:
   1. Two ELTs, one of which shall be automatic, in the case of airplanes first issued with an individual CofA after 1 July 2008; or
   2. One automatic ELT or two ELTs of any type, in the case of airplanes first issued with an individual CofA on or before 1 July 2008.
b. Airplanes with an MOPSC of 19 or less shall be equipped with at least:
   1. One automatic ELT, in the case of airplanes first issued with an individual CofA after 1 July 2008; or
   2. One ELT of any type, in the case of airplanes first issued with an individual CofA on or before 1 July 2008.
c. An ELT of any type shall be capable of transmitting simultaneously on 121,5 MHz and 406 MHz.

FLIGHT OVER WATER (CAT.IDE.A.285)

a. The following airplanes shall be equipped with a life-jacket for each person on board or equivalent flotation device for each person on board younger than 24 months, stowed in a position that is readily accessible from the seat or berth of the person for whose use it is provided:
   1. Landplanes operated over water at a distance of more than 50 NM from the shore or taking off or landing at an aerodrome where the take-off or approach path is so disposed over water that there would be a likelihood of a ditching; and
   2. Seaplanes operated over water.
b. Each life-jacket or equivalent individual flotation device shall be equipped with a means of electric illumination for the purpose of facilitating the location of persons.
c. Seaplanes operated over water shall be equipped with:
   1. A sea anchor and other equipment necessary to facilitate mooring, anchoring or manoeuvring the seaplane on water, appropriate to its size, weight and handling characteristics; and
   2. Equipment for making the sound signals as prescribed in the International Regulations for Preventing Collisions at Sea, where applicable.
d. Airplanes operated over water at a distance away from land suitable for making an emergency landing, greater than that corresponding to:
   1. 120 minutes at cruising speed or 400 NM, whichever is the lesser, in the case of airplanes capable of continuing the flight to an aerodrome with the critical engine(s) becoming inoperative at any point along the route or planned diversions; or
   2. For all other airplanes, 30 minutes at cruising speed or 100 NM, whichever is the lesser, shall be equipped with the equipment specified in (e).
e. Airplanes complying with (d) shall carry the following equipment:
   1. Life-rafts in sufficient numbers to carry all persons on board, stowed so as to facilitate their ready use in an emergency, and being of sufficient size to accommodate all the survivors in the event of a loss of one raft of the largest rated capacity;
   2. A survivor locator light in each life-raft;
   3. Life-saving equipment to provide the means for sustaining life, as appropriate for the flight to be undertaken; and
   4. At least two survival ELTs (ELTS).

SURVIVAL EQUIPMENT (CAT.IDE.A.305)

a. Airplanes operated over areas in which search and rescue would be especially difficult shall be equipped with:
   1. Signalling equipment to make the distress signals;
   2. At least one ELT(S); and
   3. Additional survival equipment for the route to be flown taking account of the number of persons on board.
b. The additional survival equipment specified in (a)(3)

does not need to be carried when the airplane:

1. Remains within a distance from an area where search and rescue is not especially difficult corresponding to:
   i. 120 minutes at one-engine-inoperative (OEI) cruising speed for airplanes capable of continuing the flight to an aerodrome with the critical engine(s) becoming inoperative at any point along the route or planned diversion routes; or
   ii. 30 minutes at cruising speed for all other airplanes;
2. Remains within a distance no greater than that corresponding to 90 minutes at cruising speed from an area suitable for making an emergency landing, for airplanes certified in accordance with the applicable airworthiness standard.

HEADSET (CAT.IDE.A.325)

a. Airplanes shall be equipped with a headset with a boom or throat microphone or equivalent for each flight crew member at their assigned station in the flight crew compartment.
b. Airplanes operated under IFR or at night shall be equipped with a transmit button on the manual pitch and roll control for each required flight crew member.

RADIO COMMUNICATION EQUIPMENT (CAT.IDE.A.330)

a. Airplanes shall be equipped with the radio communication equipment required by the applicable airspace requirements.
b. The radio communication equipment shall provide for communication on the aeronautical emergency frequency 121,5 MHz.

AUDIO SELECTOR PANEL (CAT.IDE.A.335)

Aeroplanes operated under IFR shall be equipped with an audio selector panel operable from each required flight crew member station.

TRANSPONDER (CAT.IDE.A.350)

Airplanes shall be equipped with a pressure altitude reporting secondary surveillance radar (SSR) transponder and any other SSR transponder capability required for the route being flown.

SPECIFIC APPROVALS – ANNEX V (PART-SPA)

OPERATIONS IN AIRPACE WITH REDUCED VERTICAL SEPARATION MINIMA (RVSM)

RVSM OPERATIONS (SPA.RVSM.100)

Aircraft shall only be operated in designated airspace where a reduced vertical separation minimum of 300 m (1 000 ft) applies between flight level (FL) 290 and FL 410, inclusive, if the operator has been granted an approval by the competent authority to conduct such operations.

RVSM OPERATIONAL APPROVAL (SPA.RVSM.105)

To obtain an RVSM operational approval from the competent authority, the operator shall provide evidence that:

a. The RVSM airworthiness approval has been obtained;
b. Procedures for monitoring and reporting height-keeping errors have been established;
c. A training programme for the flight crew members involved in these operations has been established;
d. Operating procedures have been established specifying:
   1. The equipment to be carried, including its operating limitations and appropriate entries in the MEL;
   2. Flight crew composition and experience requirements;
   3. Flight planning;
   4. Pre-flight procedures;
   5. Procedures prior to RVSM airspace entry;
   6. In-flight procedures;
   7. Post-flight procedures;
   8. Incident reporting;
   9. Specific regional operating procedures.

EQUIPMENT REQUIREMENTS (SPA.RVSM.110)

Aircraft used for operations in RVSM airspace shall be equipped with:

a. Two independent altitude measurement systems;
b. An altitude alerting system;
c. An automatic altitude control system;
d. A secondary surveillance radar (ssr) transponder with altitude reporting system that can be connected to the altitude measurement system in use for altitude control.

HEIGHT-KEEPING ERRORS (SPA.RVSM.115)

a. The operator shall report recorded or communicated occurrences of height-keeping errors caused by malfunction of aircraft equipment or of operational nature, equal to or greater than:
   1. A total vertical error (TVE) of ± 90 m (± 300 ft);
   2. An altimetry system error (ASE) of ± 75 m (± 245 ft); and
   3. An assigned altitude deviation (AAD) of ± 90 m (± 300 ft).
b. Reports of such occurrences shall be sent to the competent authority within 72 hours. Reports shall include an initial analysis of causal factors and measures taken to prevent repeat occurrences.
c. When height-keeping errors are recorded or received, the operator shall take immediate action to rectify the conditions that caused the errors and provide follow-up reports, if requested by the competent authority.

EXTENDED RANGE OPERATIONS WITH TWO-ENGINED AIRPLANES (ETOPS)

ETOPS (SPA.ETOPS.100)

In commercial air transport operations, two-engined aeroplanes shall only be operated beyond the threshold distance determined in accordance with CAT.OP.MPA.140 if the operator has been granted an ETOPS operational approval by the competent authority.

OPERATIONAL APPROVAL (SPA.ETOPS.105)

To obtain an ETOPS operational approval from the competent authority, the operator shall provide evidence that:

a. The aeroplane/engine combination holds an ETOPS type design and reliability approval for the intended operation;
b. A training programme for the flight crew members and all other operations personnel involved in these operations has been established and the flight crew members and all other operations personnel involved are suitably qualified to conduct the intended operation;
c. The operator's organisation and experience are appropriate to support the intended operation;
d. Operating procedures have been established.

EN-ROUTE ALTERNATE AERODROME (SPA.ETOPS.110)

a. An ETOPS en-route alternate aerodrome shall be considered adequate, if, at the expected time of use, the aerodrome is available and equipped with necessary ancillary services such as air traffic services (ATS), sufficient lighting, communi cations, weather reporting, navigation aids and emergency services and has at least one instrument approach procedure available.
b. Prior to conducting an ETOPS flight, the operator shall ensure that an ETOPS en-route alternate aerodrome is available, within either the operator's approved diversion time, or a diversion time based on the MEL generated serviceability status of the aeroplane, whichever is shorter.
c. The operator shall specify any required ETOPS enroute alternate aerodrome(s) in the operational flight plan and ATS flight plan.

ANNEXES VI, VII AND VIII

As mentioned earlier, the deadlines for establishing compliance with annexes VI to VIII are 25 August 2016 (non-commercial operations) and 21 April 2017 (specialized operations).

The outline and content for Annexes VI, VII, and VIII are very similar to Annex IV (PART-CAT) and are not covered in detail in this manual. The detailed regulations can be found on the EASA website or at *http://www.skybrary.aero/index.php/IR-OPS*

NON-COMMERCIAL AIR OPERATIONS WITH COMPLEX MOTOR-POWERED AIRCRAFT (PART-NCC) ANNEX VI

Part –NCC establishes operational requirements for air operators conducting non-specialised non-commercial air operations with complex motor-powered aircraft. These requirements are articulated in the following series of subparts:

- Subpart A - General Requirements (GEN);
- Subpart B - Operational Procedures (OP);
- Subpart C - Aircraft Performance and Operating limitations (POL);
- Subpart D - Instruments, Data and Equipment (IDE).

NON-COMMERCIAL AIR OPERATIONS WITH OTHER-THAN-COMPLEX MOTOR-POWERED AIRCRAFT (PART-NCO) ANNEX VII

Part-NCO establishes operational requirements for operators conducting non-commercial air operations with other-than-complex motor-powered aircraft (specialised and non-specialised). These requirements are articulated in the following series of subparts:

- Subpart A - General Requirements (GEN);
- Subpart B - Operational Procedures (OP);
- Subpart C - Aircraft Performance and Operating limitations (POL);
- Subpart D - Instruments, Data and Equipment (IDE), including requirements for sailplanes and balloons);
- Subpart E - Specific Requirements (SPEC):
  - Helicopter External Sling Load Operations (HESLO);
  - Human External Cargo Operations (HEC);
  - Parachute Operations (PAR);
  - Aerobatic Flights (ABF).

SPECIALIZED OPERATIONS (PART-SPO) ANNEX VIII

Part-SPO establishes operational requirements for air operators conducting specialised operations (excluding specialised non-commercial operations with other-than-complex motor-powered aircraft). These requirements are articulated in the following series of subparts:

- Subpart A - General Requirements (GEN);
- Subpart B - Operational Procedures (OP);
- Subpart C - Aircraft Performance and Operating limitations (POL);
- Subpart D - Instruments, Data and Equipment (IDE), including requirements for sailplanes and balloons).
- Subpart E - Specific Requirements (SPEC):
  - Helicopter External Sling Load Operations (HESLO);
  - Human External Cargo Operations (HEC);
  - Parachute Operations (PAR);
  - Aerobatic Flights (ABF).

OPERATOR CERTIFICATION AND SUPERVISION

GENERAL RULES FOR AIR OPERATOR CERTIFICATION (OPS 1.175)

Note 1: Appendix 1 to this paragraph specifies the contents and conditions of the AOC.

Note 2: Appendix 2 to this paragraph specifies the management and organization requirements.

a. An operator shall not operate an airplane for the purpose of commercial air transportation other than in accordance with the terms and conditions of an Air Operator Certificate (AOC).
b. An applicant for an AOC, or variation of an AOC, shall allow the Authority to examine all safety aspects of the proposed operation.
c. An applicant for an AOC must:
   1. Not hold an AOC issued by another Authority unless specifically approved by the Authorities concerned;
   2. Have his principal place of business and, if any, his registered office located in the State responsible for issuing the AOC;
   3. Satisfy the Authority that he is able to conduct safe operations.
d. If an operator has airplanes registered in different Member States, appropriate arrangements shall be made to ensure appropriate safety oversight.
e. An operator shall grant the Authority access to his organization and airplanes and shall ensure that, with respect to maintenance, access is granted to any associated Part–145 maintenance organization, to determine continued compliance with OPS 1.

f. An AOC will be varied, suspended or revoked if the Authority is no longer satisfied that the operator can maintain safe operations.
g. The operator must satisfy the Authority that:
   1. Its organization and management are suitable and properly matched to the scale and scope of the operation; and
   2. Procedures for the supervision of operations have been defined.
h. The operator must have nominated an accountable manager acceptable to the Authority who has corporate authority for ensuring that all operations and maintenance activities can be financed and carried out to the standard required by the Authority.
i. The operator must have nominated post holders, acceptable to the Authority, who are responsible for the management and supervision of the following areas:
   1. Flight operations;
   2. The maintenance system;
   3. Crew training; and
   4. Ground operations.
j. A person may hold more than one of the nominated posts if acceptable to the Authority but, for operators who employ 21 or more full time staff, a minimum of two persons are required to cover the four areas of responsibility.
k. For operators who employ 20 or less full time staff, one or more of the nominated posts may be filled by the accountable manager if acceptable to the Authority.
l. The operator must ensure that every flight is conducted in accordance with the provisions of the Operations Manual.
m. The operator must arrange appropriate ground handling facilities to ensure the safe handling of its flights.
n. The operator must ensure that its airplanes are equipped and its crews are qualified, as required for the area and type of operation.
o. The operator must comply with the maintenance requirements, in accordance with Part-M, for all airplanes operated under the terms of its AOC.
p. The operator must provide the Authority with a copy of the Operations Manual, as specified in Subpart-P and all amendments or revisions to it.
q. The operator must maintain operational support facilities at the main operating base, appropriate for the area and type of operation.

CONTENTS AND CONDITIONS OF THE AIR OPERATOR CERTIFICATE (OPS 1.175 ADDENDUM)

An AOC specifies the:
a. Name and location (principal place of business) of the operator;
b. Date of issue and period of validity;
c. Description of the type of operations authorized;
d. Type(s) of airplane(s) authorized for use;
e. Registration markings of the authorized airplane(s) except that operators may obtain approval for a system to inform the Authority about the registration markings for airplanes operated under its AOC;
f. Authorized areas of operation;
g. Special limitations; and
h. Special authorizations/approvals e.g.:
— CAT II/CAT III (including approved minima),
— (MNPS) Minimum navigation performance specifications,
— (ETOPS) Extended range operation twin engined airplanes,
— (RNAV) Area navigation,
— (RVSM) Reduced vertical separation minima,
— Transportation of dangerous goods,
— Authorization to provide cabin crew initial safety training and, if applicable, to issue the attestation provided for in Subpart-O, for those operators who provide such training directly or indirectly.

ISSUE, VARIATION AND CONTINUED VALIDITY OF AN AOC (OPS 1.180)

a. An operator will not be granted an AOC, or a variation to an AOC, and that AOC will not remain valid unless:
   1. Airplanes operated have a standard Certificate of Airworthiness issued in accordance with Commission Regulation (EC) No 1702/2003 of 24 September 2003 laying down implementing rules for the airworthiness and environmental certification of aircraft and related products, parts and appliances, as well as for the certification of design and production organizations (1) by a Member State. Standard Certificates of Airworthiness issued by a Member State other than the State responsible for issuing the AOC, will be accepted without further showing when issued in accordance with Part 21;

2. The maintenance system has been approved by the Authority in accordance with Part-M, Subpart-G; and
3. He/she has satisfied the Authority that he has the ability to:
   i. Establish and maintain an adequate organization;
   ii. Establish and maintain a quality system in accordance with OPS 1.035;
   iii. Comply with required training programmes;
   iv. Comply with maintenance requirements, consistent with the nature and extent of the operations specified, including the relevant items prescribed in OPS 1.175 (g) to (o); and
   v. Comply with OPS 1.175.

b. Notwithstanding the provisions of OPS 1.185 (f), the operator must notify the Authority as soon as practicable of any changes to the information submitted in accordance with OPS 1.185 (a) below.
c. If the Authority is not satisfied that the requirements of subparagraph (a) above have been met, the Authority may require the conduct of one or more demonstration flights, operated as if they were commercial air transport flights.

OPERATOR'S RESPONSIBILITIES

LAWS, REGULATIONS AND PROCEDURES — OPERATOR'S RESPONSIBILITIES (OPS 1.020)

An operator must ensure that:

1. All employees are made aware that they shall comply with the laws, regulations and procedures of those States in which operations are conducted and which are pertinent to the performance of their duties; and
2. All crew members are familiar with the laws, regulations and procedures pertinent to the performance of their duties.

COMMON LANGUAGE (OPS 1.025)

a. An operator must ensure that all crew members can communicate in a common language.
b. An operator must ensure that all operations personnel are able to understand the language in which those parts of the Operations Manual which pertain to their duties and responsibilities are written.

RESPONSIBILITIES (M.A.201)

a. The owner is responsible for the continuing airworthiness of an aircraft and shall ensure that no flight takes place unless:
   1. The aircraft is maintained in an airworthy condition;
   2. Any operational and emergency equipment fitted is correctly installed and serviceable or clearly identified as unserviceable;
   3. The airworthiness certificate remains valid;
   4. The maintenance of the aircraft is performed in accordance with the approved maintenance programme as specified in M.A.302.
b. When the aircraft is leased, the responsibilities of the owner are transferred to the lessee if:
   1. The lessee is stipulated on the registration document, or
   2. Detailed in the leasing contract. When reference is made in this Part to the 'owner', the term owner covers the owner or the lessee, as applicable.
c. Any person or organization performing maintenance shall be responsible for the tasks performed.
d. The pilot-in-command shall be responsible for the satisfactory accomplishment of the preflight inspection. This inspection must be carried out by the pilot or another qualified person but need not be carried out by an approved maintenance organization or by Part-66 certifying staff.
g. Maintenance of large aircraft, aircraft used for commercial air transport and components thereof shall be carried out by a Part-145 approved maintenance organization.
h. In the case of commercial air transport the operator is responsible for the continuing airworthiness of the aircraft it operates and shall:
   1. Be approved, as part of the air operator certificate issued by the competent authority, pursuant to M.A. Subpart-G for the aircraft it operates;
   2. Be approved in accordance with Part-145 or contract such an organization;

3. Ensure that paragraph (a) is satisfied.

j. The owner/operator is responsible for granting the competent authority access to the organization/aircraft to determine continued compliance with this Part.

CONTINUING AIRWORTHINESS MANAGEMENT ORGANIZATION (SUBPART-G)

This Subpart defines organizations approved for the management of the Continuing Airworthiness of aircraft.

- This Subpart requires facilities, data and competent staff.
- It also describes the tasks for which these organizations are approved for.
- It gives the general rules for record keeping.

For commercial air transport:

- This Subpart introduces the requirements of JAR-OPS Subpart-M - the approval is part of the operator's air operator certificate.
- Aircraft maintenance shall be performed by Part-145 approved organizations.

For aircraft not used in commercial air transport, this Subpart introduces the main requirements of JAR-OPS Subpart-M.

Any organization approved to this Subpart may also have the privilege to carry out airworthiness reviews. These periodic reviews are carried out to ensure the aircraft's continuing airworthiness has been properly carried out and that the aircraft can be considered as airworthy at the time of the inspection. The content of these reviews is incorporated in this Subpart.

MAINTENANCE PROGRAM (M.A.302)

a. Every aircraft shall be maintained in accordance with a maintenance program approved by the competent authority which shall be periodically reviewed and amended accordingly.

b. The maintenance program and any subsequent amendments shall be approved by the competent authority.

AIRCRAFT MAINTENANCE PROGRAM

Maintenance of a transport aircraft is performed under the responsibility of the aircraft operator according to a program he/she has to elaborate and have it approved by the civil aviation agency of his country. This rule derives from agreements which guide international commercial aviation as recommended by ICAO (International Civil Aviation Organization).

To enable their customers to fulfill these obligations at the best possible safety level, the aircraft manufacturers prepare the maintenance programs that they propose to their operators. The elaboration process follows a rigorous methodology improved by the experience acquired in accordance with specific regulations which are reinforced from the previous generation of aircraft to the next one.

The first rule of aircraft maintenance was issued in 1930. The instruments and equipment have to be inspected at given intervals to assure their correct functioning at any time. The actual methodology is based on a logical analysis by examining the consequences of functional failures and by a task-based maintenance program.

These programs are developed by a steering committee at the level of the entire aeronautical industry and supported by specialized working groups. The participants are professionals from airlines, specialists from national civil aviation authorities, engineers from the design office of the aircraft and equipment manufacturers and, finally, maintenance program specialists. For a modern aircraft like A340-500/600, A350, A380 this means the work of seventy participants during eighteen months and almost forty five thousand man hours.

GENERAL PRESENTATION

A transport aircraft operator is responsible for his maintenance program and has to get it approved by his civil aviation authority. This program is derived from the maintenance program of the aircraft manufacturer (MPD, Maintenance Planning Document).

The MPD of the manufacturer is the synthesis of three different sources:

- The MRB (Maintenance Review Board), principal process,
- The certification regulations of the aircraft type and its operational demands,

- The follow-up of the aircraft operation and the feed-back from experience which leads to additional specific tasks to maintain the airworthiness of the aircraft. (***Figure 4-2***)

The regulatory obligations are established to meet the level of safety asked for by ICAO to assure a world safety standard.

Each country publishes its airworthiness regulations but the two most important ones are the CS (Certification Specifications) issued by EASA (European Aviation Safety Agency) and the FAR (Federal Aviation Regulations) issued by the FAA (Federal Aviation Agency of the US). These airworthiness regulations are not only based on the aircraft design but also on its operation and its maintenance during the ongoing commercial operation of the aircraft.

The requirements to be respected include the type certification elements of the aircraft, the instructions to maintain its airworthiness during its operation (CS 25 appendix H) and the requirements derived from the operational rules (Air Operations, Part 145 and Part 147). The type certification requirements ensure that the design is in line with the published safety standards. The demonstration of conformity must be done before the aircraft type certificate will be issued.

Five chapters are addressed:

- The damage tolerance and the fatigue behavior of the structure (CS 25.571),
- The materials applied (CS 25.603),
- The accessibility of the aircraft zones (CS 25.611),
- The equipments, systems and their installation (CS 25.1309),
- The requirements to maintain the airworthiness of the aircraft (CS 25.1529).

The requirements to maintain airworthiness (Appendix H of JAR (Joint Aviation Rules) 25 are issued to ensure that the instructions and limits of aircraft maintenance are well established in relation with the type certification work. They have to be prepared by the aircraft manufacturer before the first commercial delivery. They comprise two important paragraphs:

- Paragraph H 25.3: (a) Aircraft maintenance manual, (b) maintenance instructions, (c) to (g) access panels, technical inspections, protection treatment, structural fixations, special tools,
- Paragraph H 25.4: limitations of airworthiness, safety elements, ALI (Airworthiness Limitation Items) and CMR (Certification Maintenance Requirements). The operational requirements address the fact that the inherent reliability characteristics of the aircraft are maintained during the commercial utilization. They are issued by the country in which the each aircraft is registered.

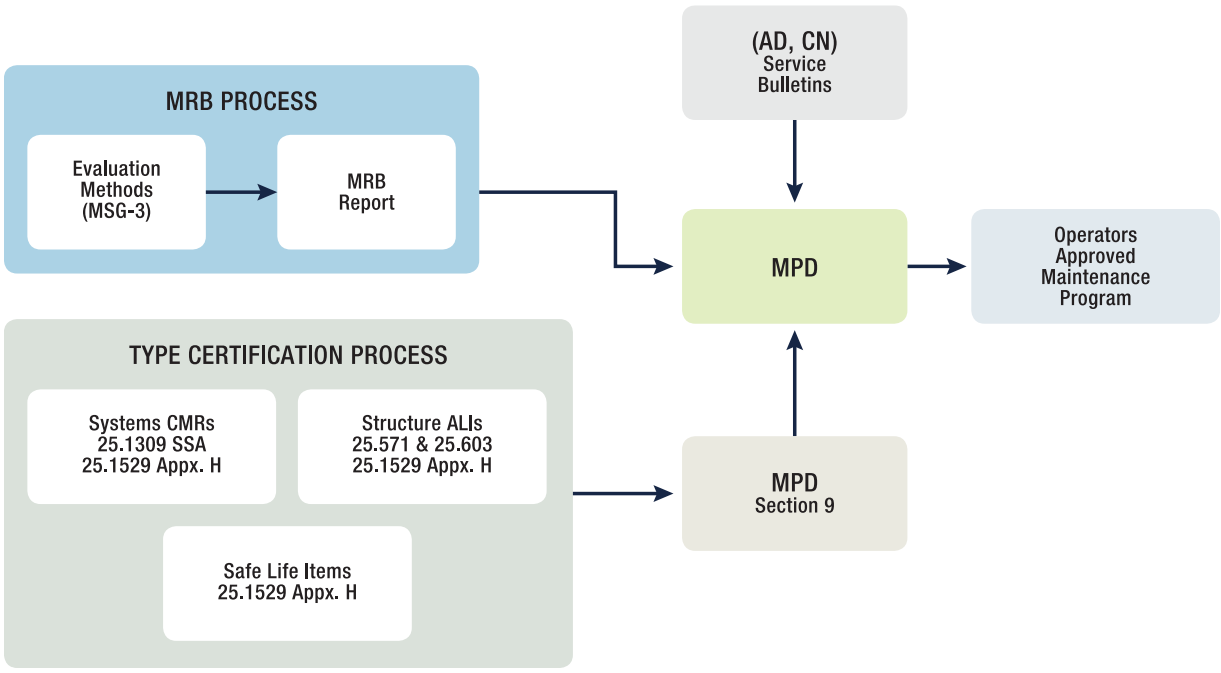

Figure 4-2. Inputs to the manufacturer's maintenance planning document.

They comprise four sections:
- Air Operations 1, section 1, sub M (for maintenance),
- Part 66, certification staff (maintenance),
- Part 145, approved maintenance organization,
- Part 147, approved maintenance training organization.

THE GENERAL MAINTENANCE REVIEW BOARD (MRB) PROCESS

The rules impose on the aircraft manufacturer the elaboration of a maintenance program. The aircraft manufacturers have developed a method named MSG-3 (Maintenance Steering Group-3) to develop this program and the tasks for the corresponding maintenance.

The MSG-3 is the latest evolution of a process started in 1930 by the Transport Airline Inspection Service, ancestor of the FAA, with its Aeronautical Bulletin 7E section 5: "Instruments and accessories shall be overhauled at suitable intervals." This concept remained in force for forty years.

In 1967, a United Airlines document put together the industry reports resulting in the development of an application of "Decision diagrams for logical analysis of maintenance programs". In July 1969, the process MSG-1 was approved by the inter-airline B747 conference and was applied to develop the maintenance program of the B747.

The MSG methodology evolves in three following steps:
- MSG-2 (Airline Manufacturer Maintenance Program Planning Document) published on 25 March 1970 by the subcommittee R & M (Repair & Maintenance) of the Air Transport Association (ATA) of the US and which was applied for the DC10 and the Lockheed 1011;
- EMSG (European Maintenance Steering Group) elaborated in 1972 and published in February 1973 by the Association of European Airlines (AEA). It was applied on A300B2 and B4, Concorde and VFW 614;
- Finally MSG-3 (Airline Manufacturer Maintenance Program Development Document) published on 30 September 1988 by a task force MSG-3 of the US Air Transport Association (ATA). This document was amended in 1988 (revision 1) and 1993 (revision 2). It is applicable for all the latest aircraft: A310, A300-600, A318-A319-A320-A321, A330-A340, B757-B767-B777.

The MSG-3 is divided into three specific sections:
- Systems and power plant program (SPP) established with MSI (Maintenance Significant Items),
- Structure program established with Structural Significant Items analysis (SSI),
- Zonal Inspection Program (ZIP) established with zonal analysis.

To develop the first inspection and maintenance program for a new aircraft type the industry has worked out the procedure of the Maintenance Review Board (MRB) prescribed by the FAA in an Advisory Circular (AC 121-22).

A three level organization has been put in place:
- A steering committee (Industry Steering Committee), presided by the airlines;
- Common working groups manufacturer airlines Maintenance Working Group (MWG) presided by the manufacturer. They work in six sections: mechanics-hydraulics, environment and interior, power plant-fuel, electrics-avionics, structure, zonal inspection,
- A Superior Counsel (Maintenance Review Board) in which only the certification authorities meet and which approves the work done which is published as Maintenance Review Board Report.

The certification authorities (EASA and FAA) participate as well in ISC (Industry Steering Committee) and Maintenance Working Groups.

It has to be noted that this work is done in common among the three parties concerned by aircraft safety: authority, manufacturer and operators. The working groups apply the directives put together in a Policy & Procedures Handbook (PPH) published for each aircraft type and regrouping the latest regulatory informations coming from service experience.

POWERPLANT AND SYSTEMS PROGRAM

The evaluations according to the MSG-3 methodology are based on the functional failures and the reasons for these failures. Before the MSG-3 process can start one has to identify the Maintenance Significant Items (MSI). That is performed by an analysis of the aircraft manufacturer which is based on the technical judgment of its specialists.

The selection of MSI identifies the items which:
- Bear a safety risk (on ground or in flight);
- Can remain undetected during operation;
- Can have an important impact on dispatch reliability or the economics of the aircraft.

The MSI analysis report comprises the classical information of a technical document (list of pages and publication date, list and reasons for the revisions of the document, applicability – aircraft types concerned).

The MSI also describes the components of the system, their reliability (MTBF – Mean Time Between Failures and MTBUR – Mean Time Between Unscheduled Removals), the redundancies of the system, and the accumulated experience with other similar programs.

It follows the description of the item itself: architecture of the system, its components, the examined functions, and functional failures etc. which have to be analyzed. The totality of this data is regrouped in a DATA SHEET A.

The analysis starts by the identification of four items:
- The functions (characteristic points during normal functioning);
- The functional failures (which functional failures could occur);
- The effects of failures (which is the result of those functional failures);
- The reasons (why could the functional failure occur). These are listed in detail in a DATA SHEET B.

Each reason of malfunctioning is then evaluated following the logic analysis path of MSG-3. It comprises two levels: first the examination of each functional failure following four questions to determine the Failure Effect Category (FEC), then to take into consideration the failure causes to determine via five questions which type of task has to be applied.

Figure 4-3 shows the logic analysis path and the five categories by which they can be differentiated: Evident critical failure, evident operational failure, evident economical failure, critical hidden failure, noncritical hidden failure. The second analysis level determines which type of a maintenance task has to be assigned to this item to take into consideration the causes of the failure.

Five types of tasks have been defined:
- Lubrication-refill of fluid levels
- Visual or operational verification
- Inspection or functional verification
- Repair
- Replacement

The analysis allows selecting the maintenance task or several tasks as well as the inspection period for the item considered.

The results of these analyses are regrouped in synthesis papers which have to be validated by the industry steering committee (ISC) before they can be approved by the MRB. To complete their elaboration the working groups have to detail sufficiently each task to enable the writers of the maintenance documentation are able to translate the maintenance procedure while respecting the intentions of the working group. Finally to benefit from the zonal insp ection program (ZIP, see further down), the maintenance tasks which request a general visual inspection (GVI) can be transferred into the ZIP when their inspection frequency is respected. This allows avoiding unnecessary duplications.

OBLIGATIONS FROM CERTIFICATION MAINTENANCE REQUIREMENTS (CMR)

The aircraft type certification work identifies among others the maintenance tasks. In addition the civil aviation authorities introduce specific requirements. In particular the manufacturer has to do a system safety analysis (SSA) requested by Paragraph CS 25.1309. In some cases the maintenance tasks have to be prescribed to obtain the necessary reliability level. This work is done by a specific committee: the Committee of coordination of certification and maintenance which examines the requests derived from the certification or CMR (Certification Maintenance Requirements) which holds the definitive list and orders it into two categories:
- The CMR* (CMR one star): maintenance tasks with application intervals which cannot be modified by the operators without previous consent of the manufacturer and the certification authority;
- The CMR** (CMR two stars): maintenance tasks with interval applications which the operators can modify according to the procedures approved in their countries.
- The CMR is published in an annex document added to the MRB report.

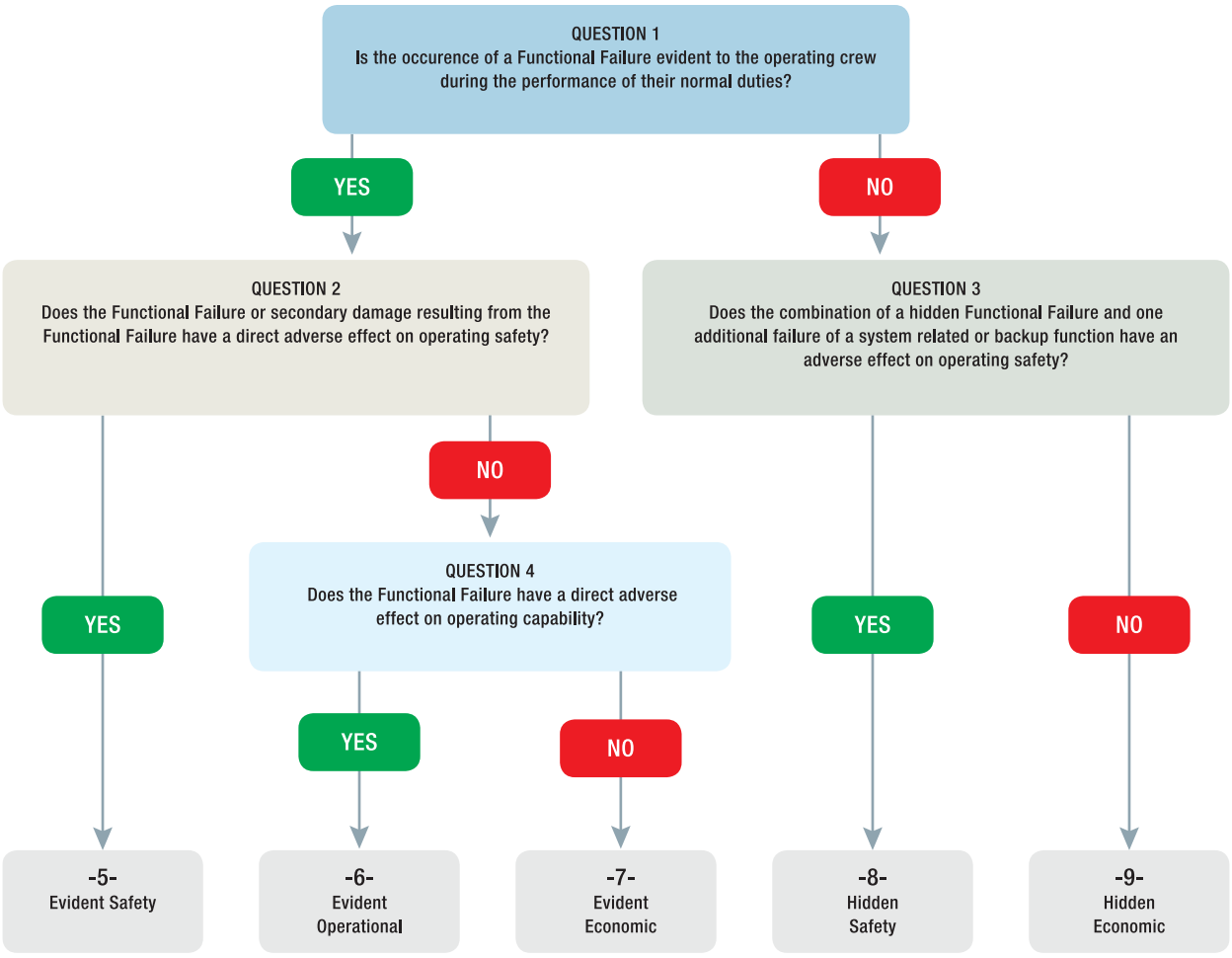

Figure 4-3. MSG-3 logic to categorize functional failure effects.

STRUCTURE PROGRAM

The aircraft structure is analyzed to determine the items which need special regard. There are two main categories distinguished.

Structure Significant Items (SSI) are enter into the structure maintenance program. Part of this category are those items which contribute significantly to loads applied during flight, ground loads, pressurization, and trajectory control and where a failure threatens the structural integrity and the safety of the aircraft. The other items to survey are those considered in the zonal program.

The selection of SSI depends on two factors:

- The consequences of failures (critical locations): one identifies the locations which contribute significantly to withstand the loads and where the result for damage tolerance and safe life have to be confirmed;
- The failure probability, determined in accordance to the knowledge of the obtained loads, the operational environment and the identification of the destinations which contribute to damages in line with three causes of damage (accidental damage, deterioration due to the environment and fatigue damage).

Typically, the areas exposed to these damages which enter into this category are: the assemblies and bigger subassemblies, the static joints which need lubrication, the fatigue sensitive zones which take a concentration of loads, intersections, assemblies under stress or alternating stress and compression, major metallic items, openings in panels, doors and windows, etc.

Additionally, there are zones of concern which are exposed to corrosion (such as toilets, galleys, belly and corrosion affected zones under stress). Also those zones exposed to accidental exterior damage or to maintenance errors have to be considered (door thresholds, zones of maintenance activities or exposed to leaks of corrosive fluid). Final category to be considered are the safe life items.

The MSG-3 analysis as applied to structure. As for systems and power plant a logical analysis methodology is applied on the SSI items. A logical decision process has been adapted to the SSI analysis which leads to:

- Differentiate between damage-tolerant and safe-life items;
- Determine the feasibility and type of inspection techniques for damage-tolerant items and zones exposed to environmental or accidental damage.

The analysis leads to two possible results, return to the design office to reinforce the structural resistance, or classification within one of the two structural program listings:

- List of Airworthiness Limitation Items (ALI)
- Consolidated structural maintenance program.

Each analysis is supported by an individual file (SSI Analysis). The structure program agreement proposed by the working group follows the same procedure as for systems and power plant: presentation and discussion within the Industry Steering Committee, submission to Maintenance review Board leading to the structure program approval to be integrated into the MRB Report.

ANALYSIS OF ACCIDENTAL DAMAGE

The aircraft manufacturer Airbus follows the policy not to create maintenance tasks covering accidental damage. These items are analyzed to evaluate their eventual impact on fatigue or corrosion resistance. If the impact is significant. It is taken into consideration in the correspondent SSI analysis and is translated, if necessary, into supplementary structure inspection tasks.

DAMAGE ANALYSIS DUE TO THE ENVIRONMENT

Metallic structures are exposed to multiple variations of corrosion: stress corrosion, galvanic, intergranular, microbiologic, fretting, etc in small or even vast areas. Each item is evaluated as a function of its location, the type of corrosion enabling further deterioration, and the results classified as a function of their severity to determine the necessary inspection intervals. Three severity levels are internationally recognized:

- Corrosion level 1: corrosion appears in between two inspections and which can be treated within the allowed tolerances, or corrosion exceeding the allowable limits but does not occur under the normal aircraft operation conditions,
- Corrosion level 2: corrosion appears in between two inspections where the treatment exceeds the allowable limits and results in a repair or a structural reinforcement,
- Corrosion level 3: corrosion discovered during an inspection which is considered to threaten the structural integrity and requires an immediate repair.

The rules of MSG-3 rev. 2 of 1993 demand a program to prevent and control corrosion (CPCP, Corrosion Prevention and Control Program) which has to be established by the aircraft manufacturer to allow to contain the corrosion at level 1.

The manufacturer Airbus has applied this requirement not only for new aircraft but also retroactively for the totality of its production range. The CPCP is therefore incorporated as an integral part of the structure maintenance program.

The composites necessitate the consideration of specific considerations: other sources of degradation can damage them, such as paint removers; in addition sudden impacts can reduce severely the strength of a composite without visible exterior damage.

Airbus e.g. considers these aspects already at the level of pre-design: The impacts which threaten the strength of a composite part have to be visible from the outside; tests have demonstrated that the non-visible damages do not have a critical importance for the strength of the structure.

THE "ALI" (AIRWORTHINESS LIMITATION ITEMS)

All critical fatigue items have been put together, as well those related to flight cycles and corrosion critical items. These tasks related to fatigue and damage tolerance are high-lighted very precisely. The threshold of their first inspection and the repeat interval inspection cannot be modifies by the aircraft operators or their local civil aviation authority without agreement from the manufacturer and his certification authority. The document containing the ALI is a basic element of the structure maintenance program.

The operators are obliged to produce a report for the manufacture at each detection of structural damage of an item of being part of the chapter Airworthiness Limitation. A form is included in the MRB report.

ZONAL INSPECTION PROGRAM (ZIP)

The zonal inspection program (ZIP) covers the requirements of the visible inspection of the whole aircraft, by succeeding zones covering systems, power plant and structure to assure their general good condition and to maintain safety. Each zone is clearly defined, with borders easily to identify and all access panels are opened for inspection.

The aircraft is split into eight major zones:

- Lower fuselage up to rear pressure bulkhead
- Upper fuselage up to rear pressure bulkhead
- Aft section and tail
- Engines, pylons and nacelles
- Right wing
- Left wing
- Landing gear and landing gear panels
- Passenger and cargo doors

These major zones are split into smaller ones to ease inspection. An agreement on numeration allows for a logical determination of symmetrical zones as well as neighboring zones. The following figure gives an example for the definition of the left-hand engines of an A320 (engine 1 and 2). There is only one type of task in the maintenance program ZIP; general visual inspection (GVI). Each zone is analyzed to identify the type of deterioration or damage appearing during operation. In any case the content does not pertain to be exhaustive. It is assumed that the aircraft mechanic who performs the inspection must have a good knowledge of the aircraft design and its systems located within the zone he inspects.

The inspection tasks ZIP will check:

- The visible structure parts and look for their deterioration such as accidental damage, corrosion, fretting and interferences, leaks, fissure and general condition of rivets and fixations,
- The good condition of installation (and stabilization) of equipment, harnesses, conduits, ducts, pulleys, etc.
- The condition of cowls, hoods, and opened or dismounted panels to create access to the zone.

The threshold of the first inspection and the repeat intervals utilize the same maintenance program definitions as the other maintenance activities: A check (e.g. 500 flight hours), C check (e.g. 15 months) and multiples, five years and ten years (structure checks).

The shorter thresholds and repeat intervals aim at those items exposed to accidental damage or having consequences for the dispatch reliability of the aircraft; they do not need much access to very specific zones. The longer thresholds and intervals impose a more detailed access level and aim at damage which occurs during the utilization up to a point where they are detectable by a general visual inspection. We have shown previously that tasks can be transferred from the maintenance programs of structure and systems and power plant. When the selected tasks are of the order of general visual inspections and when the frequencies of the program are coherent then they are integrated into the ZIP. This procedure avoids duplications of tasks but responding exactly to the requirements of the maintenance program.

ANALYSIS OF ZIP TASKS

As for the other chapters of the maintenance program a logical analysis methodology is applied to determine the intervals of the ZIP tasks.

Three parameters are considered:

- The density: When the installed items in a zone are packed together the possibility to inspect each part properly and as well the structure behind is affected.
- The ranking: the ranking of each component in terms of safety and costs of functioning is evaluated. The damage which a malfunctioning could provoke on the elements adjacent of the zone is as well considered.
- The environment: the exposure to heat, vibrations or accidental damage is as well evaluated.

These three parameters are then combined according to a decision logic to determine the wanted inspection intervals. These evaluations call for the personal judgment of the specialists, coming from the experience with the inservice fleet before the decision is taken by using the results from logical analysis. This is how an inspection program is obtained which is both practical and realistic.

THE MRB REPORT (MAINTENANCE REVIEW BOARD)

This report provides to the operators the minimum and initial maintenance program of the aircraft, with the tasks and application frequencies for systems, power plant and structure. The objective of this document is to serve as a basis for each operator to elaborate his own maintenance program which will be in turn approved by the airworthiness authorities of his country. The organization of the report reflects the organization of the work of which it combines the results.

- Introduction
- General rules applicable at the total aircraft program
- Maintenance program systems and power plant
- Maintenance program structures
- Zonal maintenance program
- And a specific chapter: Specific American (US) requirements

MAINTENANCE PLANNING DOCUMENT (MPD)

As indicated above the MRB report only contains the initial maintenance program of the aircraft, at the time of its first commercial operation. The MPD is destined to follow that initial document to incorporate the evolutions during the life of the aircraft which can thirty or more years. These evolutions are taken from five different sources: the airworthiness directives imposed by the certification authorities, the SIL (Service Information Letters) of the aircraft manufacturer, the SB (Service Bulletins) for inspection, the SB for modification and the evolutions of safe-life. Their impact on the maintenance tasks and their periodicity are permanently incorporated into the MPD.

MINIMUM EQUIPMENT LISTS & CDL (OPERATOR'S RESPONSIBILITIES)

MEL

An operator shall establish, for each airplane, a Minimum Equipment List (MEL) approved by the Authority. This shall be based upon, but no less restrictive than, the relevant Master Minimum Equipment List (MMEL) (if this exists) accepted by the Authority. An operator shall not operate an airplane other than in accordance with the MEL unless permitted by the Authority. Any such permission will in no circumstances permit operation outside the constraints of the MMEL.

CDL

The Configuration Deviation List (CDL) allows for continued operations with missing secondary airframe and engine parts. Approval for operating with these parts missing is authorized by an amendment to the type certificate which as a result requires an Aircraft Flight Manual (AFM) supplement. Any part not included in the CDL must be considered necessary for flight. Therefore, without a CDL, missing secondary airframe and engine parts would ground the airplane until repair or replacement of the part is accomplished. An approved CDL is evaluated based on Advisory Circular AC 25-7A during flight testing for aircraft certification and contains the necessary takeoff performance decrement, the landing performance decrement, and the en route performance decrement as appropriate for the airplane type.

DOCUMENTS TO BE CARRIED (OPS 1.125)

a. An operator shall ensure that the following documents or copies thereof are carried on each flight:
   1. The Certificate of Registration;
   2. The Certificate of Airworthiness;
   3. The original or a copy of the Noise Certificate (if applicable), including an English translation, where one has been provided by the Authority responsible for issuing the noise certificate;
   4. The original or a copy of the Air Operator Certificate;
   5. The Aircraft Radio License; and
   6. The original or a copy of the Third Party Liability Insurance Certificate(s).

b. Each flight crew member shall, on each flight, carry a valid flight crew license with appropriate rating(s) for the purpose of the flight.

MANUALS TO BE CARRIED (OPS 1.130)

An operator shall ensure that:

1. The current parts of the Operations Manual relevant to the duties of the crew are carried on each flight;
2. Those parts of the Operations Manual which are required for the conduct of a flight are easily accessible to the crew on board the airplane; and
3. The current Airplane Flight Manual is carried in.

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ADDITIONAL INFORMATION AND FORMS TO BE CARRIED (OPS 1.135)

a. An operator shall ensure that, in addition to the documents and manuals prescribed in OPS 1.125 and OPS 1.130, the following information and forms, relevant to the type and area of operation, are carried on each flight:
   1. Operational Flight Plan containing at least the information required in OPS 1.1060;
   2. Airplane Technical Log containing at least the information required in Part-M, paragraph M. A. 306 Operator's technical log system;
   3. Details of the filed ATS flight plan;
   4. Appropriate NOTAM/AIS briefing documentation;
   5. Appropriate meteorological information;
   6. Mass and balance documentation as specified in Subpart J;
   7. Notification of special categories of passenger such as security personnel, if not considered as crew, handicapped persons, inadmissible passengers, deportees and persons in custody;
   8. Notification of special loads including dangerous goods including written information to the commander as prescribed in OPS 1.1215 (c);
   9. Current maps and charts and associated documents as prescribed in OPS 1.290 (b)(7);
   10. Any other documentation which may be required by the States concerned with this flight, such as cargo manifest, passenger manifest etc; and
   11. Forms to comply with the reporting requirements of the Authority and the operator.

b. The Authority may permit the information detailed in subparagraph (a) above, or parts thereof, to be presented in a form other than on printed paper. An acceptable standard of accessibility, usability and reliability must be assured.

IDENTIFICATION OF PARTS AND APPLIANCES

IDENTIFICATION OF PRODUCTS (21A.801)

The identification of products shall include the following information:

- Manufacturer's name.
- Product designation.
- Manufacturer's Serial Number.
- Any other information the Agency finds appropriate.

Any natural or legal person that manufactures an aircraft or engine under Subpart-G or Subpart-F shall identify that aircraft or engine by means of a fireproof plate that has the information specified in paragraph (a) marked on it by etching, stamping, engraving, or other approved method of fireproof marking. The identification plate shall be secured in such a manner that it is accessible and legible, and will not likely be

defaced or removed during normal service, or lost or destroyed in an accident.

IDENTIFICATION OF PARTS AND APPLIANCES (21A.804)

Each manufacturer of a part or appliance shall permanently and legibly mark the part or appliance with:

- A name, trademark, or symbol identifying the manufacturer; and
- The part number, as defined in the applicable design data; and
- The letters EPA (European Part Approval) for parts or appliances produced in accordance with approved design data not belonging to the type-certificate holder of the related product, except for ETSO articles.

Each person who manufactures an APU under Subpart-G or Subpart-F shall identify that APU by means of a fireproof plate that has the information specified in paragraph (a) marked on it by etching, stamping, engraving, or other approved method of fireproof marking. The identification plate shall be secured in such a manner that it is accessible and legible, and will not likely be defaced or removed during normal service, or lost or destroyed in an accident.

MARKING OF BREAK-IN POINTS

An operator shall ensure that, if designated areas of the fuselage which are suitable for break-in by rescue crews in an emergency are marked on an airplane, such areas shall be marked as shown in ***Figure 4-4***. The color of the markings shall be red or yellow, and if necessary they shall be outlined in white to contrast with the background. If the corner markings are more than two meters apart, intermediate lines 9 cm × 3 cm shall be inserted so that there is no more than two meters between adjacent marks. (***Figure 4-4***)

EMERGENCY MARKINGS

Emergency markings are required to give information to passengers and crew.

The location of emergency exits, emergency lightning or floor proximity lightning, location of fire extinguishers, fire axes, are identified with red letters and signs. Emergency exit placards meet specific criteria as they have to be understood by all passengers (Clear, Simple and Precise operating instructions). (***Figure 4-5***)

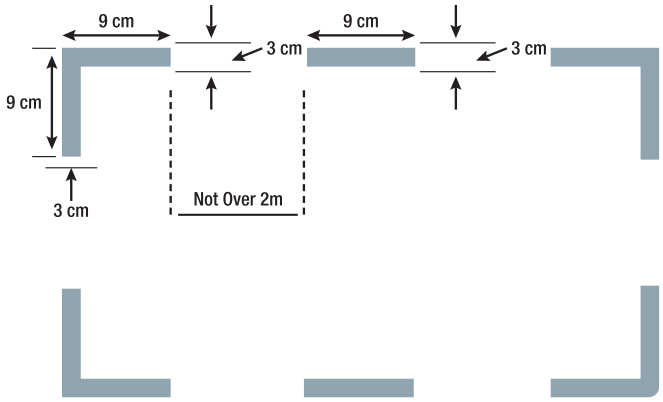


Figure 4-4. Specifications for marking break-in area on the outside of the aircraft for rescue crew identification.

Figure 4-5. Required emergency exit markings.

EMERGENCY EXIT MARKINGS (CS 26.110)

a. Each passenger emergency exit, its means of access, and its means of opening is conspicuously marked.
b. The identity and location of each passenger emergency exit is recognizable from a distance equal to the width of the cabin.
c. Means are provided to assist the occupants in locating the exits in conditions of dense smoke.
d. The location of each passenger emergency exit is indicated by a sign visible to occupants approaching along the passenger aisles. There is:
    1. A passenger emergency exit locator sign above the aisle (or aisles) near each passenger emergency exit, or at another overhead location if it is more practical because of low headroom, except that one sign may serve more than one exit if each exit can be seen readily from the sign;
    2. A passenger emergency exit marking sign next to each passenger emergency exit, except that one sign may serve two such exits if they can both be seen readily from the sign; and

3. A sign on each bulkhead or divider that prevents fore and aft vision along the passenger cabin to indicate emergency exits beyond and obscured by the bulkhead or divider, except that if this is not possible, the sign may be placed at another appropriate location.

Each sign listed in this sub-paragraph may use the word 'exit' in its legend in place of the term 'emergency exit' or a universal symbolic exit sign. The design of the exit signs is chosen to provide a consistent set throughout the cabin.

e. The location of the operating handle and instructions for opening exits from the inside of the airplane are clearly shown in the following manner:
   1. Each passenger emergency exit has, on or near the exit, a marking that is readable from a distance of 76 cm (30 inches);
   2. Each passenger emergency exit operating handle and the cover removal instructions, if the handle is covered, are:
      i. Self-illuminated with an initial brightness of at least 160 micro-lamberts (with the illumination level not decreasing in service to below 100 micro-lamberts); or
      ii. Conspicuously located and well illuminated by the emergency lighting even in conditions of occupant crowding at the exit.
   3. All Type II and larger passenger emergency exits with a locking mechanism released by motion of a handle, are marked by a red arrow with a shaft at least 19 mm (0.75 inch) wide, adjacent to the handle, that indicates the full extent and direction of the unlocking motion required. The word OPEN is horizontally situated adjacent to the arrow head and is in red capital letters at least 25 mm (1 inch) high. The arrow and word OPEN are located on a background which provides adequate contrast. (***Figure 4-5***)

f. Each emergency exit that is openable from the outside, and its means of opening is marked on the outside of the airplane. In addition, the following apply:
   1. The outside marking for each passenger emergency exit in the side of the fuselage includes one 5 cm (2 inch) colored band outlining the exit.
   2. Each outside marking including the band, has color contrast to be readily distinguishable from the surrounding fuselage surface. (***Figure 4-6***)

Figure 4-6. Required external emergency exit markings.

INTERIOR EMERGENCY LIGHTING AND EMERGENCY LIGHT OPERATION (CS 26.120)

a. An emergency lighting system, independent of the main lighting system, is installed. However, sources of general cabin illumination may be common to both the emergency and the main lighting system if the power supply to the emergency lighting system is independent of the power supply to the main lighting system. The emergency lighting system includes:
   1. Illuminated emergency exit marking and locating signs, sources of general cabin illumination and interior lighting in emergency exit areas.
   2. The floor proximity emergency escape path marking provides emergency evacuation guidance for passengers when all sources of illumination more than 1.22 m (4 feet) above the cabin aisle floor are totally obscured. In the dark of the night, the floor proximity emergency escape path marking enables each passenger to; after leaving the passenger seat, visually identify the emergency escape path along the cabin aisle floor to the first exits or pair of exits forward and aft of the seat.

b. Except for lights forming part of the emergency lighting, subsystems that serve no more than one assist means are automatically activated when the assist means is deployed. Each light required for interior and exterior emergency lighting:
   1. Is operable manually both from the flight crew station and for airplanes on which a cabin crew member is required, from a point in the passenger compartment that is readily accessible from a normal cabin crew seat;
   2. Has a means to prevent inadvertent operation of the manual controls;
   3. When armed or turned on at either station, remains lighted or becomes lighted upon interruption of the airplane's normal electric power;
   4. Provides the required level of illumination for at least 10 minutes at the critical ambient conditions after emergency landing;
   5. Has a cockpit control device that has an 'on', 'off', and 'armed' position.

c. Each sign required by Part 26.120 may use a universal symbolic exit sign. The design of the signs is chosen to provide a consistent set throughout the cabin.

QUESTIONS

Question: 4-1
An _____ is required if an operator wishes to engage in commercial air transportation.

Question: 4-2
Who is responsible for the continuing airworthiness of an aircraft?

Question: 4-3
The manufacturer's maintenance planning document (MPD) aids operators in fulfilling their obligation to create and follow their own approved _____.

Question: 4-4
A manufacturer's MSG is a _____ _____ _____.

Question: 4-5
The aircraft _____ identifies the maintenance tasks.

Question: 4-6
Level 3 corrosion threatens structural integrity and requires an _____ repair.

Question: 4-7
What is a MEL?

ANSWERS

Answer: 4-1
Air Operator Certificate (AOC).

Answer: 4-2
owner.

Answer: 4-3
maintenance program.

Answer: 4-4
maintenance steering group.

Answer: 4-5
type certificate work.

Answer: 4-6
immediate.

Answer: 4-7
Minimum equipment list. An operator shall not operate an airplane other than in accordance with the MEL.

PART-66 SYLLABUS **LEVELS**

CERTIFICATION CATEGORY →	B1	B2

Sub-Module 05

CERTIFICATION OF AIRCRAFT, PARTS AND APPLIANCES

Knowledge Requirements

	B1	B2
10.5 - Certification of aircraft, parts and appliances		
(a) General; General understanding of Part-21 and EASA certification specifications CS-23, 25, 27, 29.	1	1
(b) Documents; Certificate of Airworthiness; restricted certificates of airworthiness and permit to fly; Certificate of Registration; Noise Certificate; Weight Schedule; Radio Station License and Approval.	2	2

CERTIFICATION-AIRCRAFT, PARTS AND APPLIANCES

Level 1
A familiarization with the principal elements of the subject.

Objectives:
(a) The applicant should be familiar with the basic elements of the subject.
(b) The applicant should be able to give a simple description of the whole subject, using common words and examples.
(c) The applicant should be able to use typical terms.

Level 2
A general knowledge of the theoretical and practical aspects of the subject and an ability to apply that knowledge.

Objectives:
(a) The applicant should be able to understand the theoretical fundamentals of the subject.
(b) The applicant should be able to give a general description of the subject using, as appropriate, typical examples.
(c) The applicant should be able to use mathematical formula in conjunction with physical laws describing the subject.
(d) The applicant should be able to read and understand sketches, drawings and schematics describing the subject.
(e) The applicant should be able to apply his knowledge in a practical manner using detailed procedures.

CERTIFICATION SPECIFICATIONS (CS)

Certification Specifications (CS) are large documents which define the requirements and capabilities of aircraft in each category. The content of a CS can be summed up as follows:

- Performances (e.g. climb gradients one engine inoperative) and handling qualities (e.g. static and dynamic stability, control force, etc.)
- Structure (e.g. gusts envelope, maneuvers envelope, fatigue requirements, etc.)
- Design and Construction (e.g. emergency evacuation provisions; fire protection, etc.)
- Powerplant Installation (e.g. uncontained powerplant failure, fuel and oil system requirements, etc.)
- Systems and Equipment (e.g. systems safety analyses; requirements for electrical, hydraulic and pneumatic systems; required equipment for flight and navigation, etc.)
- Manuals and limitations (e.g. speed limitations, flight manual, continued airworthiness manual, etc.).

The requirements usually prevent unsafe conditions (e.g. performance requirements with one engine inoperative). However some have been written to limit the consequences of such unsafe conditions (e.g. emergency evacuation to allow passengers escaping after a minor crash). Other requirements may be performance oriented (e.g. CS-25.1309 that broadly requires an inverse relationship between the probability of a failure and its consequences) when others may impose design constraints (e.g. CS-25.807 that defines the required number and types of emergency exist versus number of passengers). The following are examples of Certification Specification categories.

SAILPLANES AND POWERED SAILPLANES (CS 22)

This Airworthiness Code is applicable to sailplanes and powered sailplanes in the utility U and aerobatic A categories:

- Sailplanes: the maximum weight of which does not exceed 750 kg;
- Single engine (spark or compression ignition) powered sailplanes: the design value W/b 2 (weight to span 2) of which is not greater than 3(W[kg], b[m]) and the maximum weight of which does not exceed 850 kg;
- Sailplanes and powered sailplanes: the number of occupants of which does not exceed two.

Those requirements in CS–22 which apply only to powered sailplanes are marginally annotated with the letter P. Requirements not so marked apply both to sailplanes and to powered sailplanes with engines stopped and engine or propeller retracted where appropriate. In these requirements the word 'sailplane' means both 'sailplane' and 'powered sailplane'.

Unless specifically stated otherwise, the term 'powered sailplane' includes those powered sailplanes which may be incapable of complying with CS 22.51 and/or CS 22.65(a) and which must consequently be prohibited from taking off solely by means of their own power by a limitation in the Flight Manual. These are referred to in the text as 'Self-Sustaining Powered Sailplanes'. For Self-Sustaining Powered Sailplanes the additional requirements in Appendix I are applicable. (***Figure 5-1***)

NORMAL, UTILITY AEROBATIC AND COMMUTER AIRPLANES (CS 23)

This Airworthiness code is applicable to –

- Airplanes in the normal, utility and aerobatic categories that have a seating configuration, excluding the pilot seat(s), of nine or fewer and a maximum certificated take-off weight of 5 670 kg (12 500 lb) or less; and
- Propeller-driven twin-engine airplanes in the commuter category that have a seating configuration, excluding the pilot seat(s) of nineteen or fewer and a maximum certificated take-off weight of 8 618 kg (19 000 lb) or less. (***Figure 5-2***)
-

LARGE AIRPLANES (CS 25)

The Airworthiness code is applicable to airplanes powered with turbine engines: (***Figure 5-3***)

Figure 5-1. Sailplanes and powered sailplanes.

Figure 5-2. Normal, utility aerobatic and commuter airplanes.

Figure 5-3. Large aircraft.

- Without contingency thrust ratings, and
- For which it is assumed that thrust is not increased following engine failure during take-off except as specified in sub-paragraph (c).

In the absence of an appropriate investigation of operational implications these requirements do not necessarily cover;

- Automatic landings.
- Approaches and landings with decision heights of less than 60 m (200 ft).
- Operations on unprepared runway surfaces.

If the airplane is equipped with an engine control system that automatically resets the power or thrust on the operating engine(s) when any engine fails during take-off, additional requirements pertaining to airplane performance and limitations and the functioning and reliability of the system, contained in Appendix I, must be complied with.

SMALL ROTORCRAFT (CS 27.1)

This Airworthiness Code is applicable to small rotorcraft with maximum weights of 3 175 kg (7 000 lbs) or less and nine or less passenger seats.

Multi-engine rotorcraft may be type certificated as Category A provided the requirements referenced in Appendix C are met. (***Figure 5-4***)

Figure 5-4. Small rotorcraft.

LARGE ROTORCRAFT (CS 29.1)

This Airworthiness Code is applicable to large rotorcraft. (***Figure 5-5***) Large rotorcraft must be certificated in accordance with either the Category A or Category B requirements.

A multi-engine rotorcraft may be type certificated as both Category A and Category B with appropriate and different operating limitations for each category.

- Rotorcraft with a maximum weight greater than 9 072 kg (20 000 pounds) and 10 or more passenger seats must be type certificated as Category A rotorcraft.
- Rotorcraft with a maximum weight greater than 9 072 kg (20 000 pounds) and nine or less passenger seats may be type certificated as Category B rotorcraft provided the Category A requirements of Subparts C, D, E, and F are met.

Figure 5-5. Large rotorcraft.

- Rotorcraft with a maximum weight of 9 072 kg (20 000 pounds) or less but with 10 or more passenger seats may be type certificated as Category B rotorcraft provided the Category A requirements of CS 29.67(a)(2), 29.87, 29.1517, and of Subparts C, D, E, and F are met.
- Rotorcraft with a maximum weight of 9072 kg (20 000 pounds) or less and nine or less passenger seats may be type certificated as Category B rotorcraft.

CS-VLA VERY LIGHT AIRPLANES

This airworthiness code is applicable to airplanes with a single engine (spark or compression ignition) having not more than two seats, with a Maximum Certificated Take-off Weight of not more than 750 kg and a stalling speed in the landing configuration of not more than 83 km/h (45 knots)(CAS), to be approved for day-VFR only. (***Figure 5-6***)

Figure 5-6. CS VLA airplane.

PRODUCTION ORGANIZATION APPROVAL

APPROVAL REQUIREMENTS (21A.145)

The production organization shall demonstrate, on the basis of the information submitted in accordance with 21A.143 that:

a. With regard to general approval requirements, facilities, working conditions, equipment and tools, processes and associated materials, number and competence of staff, and general organization are adequate to discharge obligations under 21A.165.
b. With regard to all necessary airworthiness, noise, fuel venting and exhaust emissions data:
    - The production organization is in receipt of such data from the Agency, and from the holder of, or applicant for, the type-certificate, restricted type-certificate or design approval, to determine conformity with the applicable design data.
    - The production organization has established a procedure to ensure that airworthiness, noise, fuel venting and exhaust emissions data are correctly incorporated in its production data.
    - Such data are kept up to date and made available to all personnel who need access to such data to perform their duties.
c. With regard to management and staff:
    - A manager has been nominated by the production organization, and is accountable to the Competent Authority.

His or her responsibility within the organization shall consist of ensuring that all production is performed to the required standards and that the production organization is continuously in compliance with the data and procedures identified in the exposition referred to in 21A.143.

- A person or group of persons have been nominated by the production organization to ensure that the organization is in compliance with the requirements of this Part, and are identified, together with the extent of their authority. Such person(s) shall act under the direct authority of the accountable manager referred to in subparagraph.
- The persons nominated shall be able to show the appropriate knowledge, background and experience to discharge their responsibilities.
- Staff at all levels have been given appropriate authority to be able to discharge their allocated responsibilities and that there is full and effective coordination within the production organization in respect of airworthiness, noise, fuel venting and exhaust emission data matters.

d. With regard to certifying staff, authorized by the production organization to sign the documents issued under 21A.163 under the scope or terms of approval:
   - The knowledge, background (including other functions in the organization), and experience of the certifying staff are appropriate to discharge their allocated responsibilities.
   - The production organization maintains a record of all certifying staff which shall include details of the scope of their authorization.
   - Certifying staff are provided with evidence of the scope of their authorization.

PRIVILEGES (21A.163)

Pursuant to the terms of approval issued under 21A.135, the holder of a production organization approval may:

a. Perform production activities under this Part.
b. In the case of complete aircraft and upon presentation of a Statement of Conformity (EASA Form 52) under 21A.174, obtain an aircraft certificate of airworthiness and a noise certificate without further showing.
c. In the case of other products, parts or appliances issue authorized release certificates (EASA Form 1) under 21A.307 without further showing.
d. Maintain a new aircraft that it has produced and issue a certificate of release to service (EASA Form 53) in respect of that maintenance.

OBLIGATIONS OF THE HOLDER (21A.165)

The holder of a production organization approval shall:

a. Ensure that the production organization exposition furnished in accordance with 21A.143 and the documents to which it refers, are used as basic working documents within the organization.
b. Maintain the production organization in conformity with the data and procedures approved for the production organization approval.
c. Determine that:
   - Each completed aircraft conforms to the type design and is in condition for safe operation prior to submitting Statements of Conformity to the Competent Authority, or
   - Other products, parts or appliances are complete and conform to the approved design data and are in condition for safe operation before issuing EASA Form 1 to certify airworthiness, and additionally in case of engines, determine according to data provided by the engine type-certificate holder that each completed engine is in compliance with the applicable emissions requirements as defined in 21A.18 (b), current at the date of manufacture of the engine, to certify emissions compliance, or
   - Other products, parts or appliances conform to the applicable data before issuing EASA Form 1 as a conformity certificate.

DURATION AND CONTINUED VALIDITY (21A.159)

a. A production organization approval shall be issued for an unlimited duration. It shall remain valid unless:
   - The production organization fails to demonstrate compliance with the applicable requirements of this Subpart; or
   - The Competent Authority is prevented by the holder or any of its partners or subcontractors to perform the investigations in accordance with 21A.157; or
   - There is evidence that the production organization cannot maintain satisfactory control of the manufacture of products, parts or appliances under the approval; or
   - The production organization no longer meets the requirements of 21A.133; or
   - The certificate has been surrendered or revoked under 21B.245.
b. Upon surrender or revocation, the certificate shall be returned to the Competent Authority.

DESIGN ORGANIZATION APPROVAL

PART 21 – SUBPART-J

This Subpart establishes the procedure for the approval of design organizations and rules governing the rights and obligations of applicants for, and holders of, such approvals.

APPROVAL REQUIREMENTS (21A.245)

The design organization shall demonstrate, on the basis of the information submitted in accordance with 21A.243 that, in addition to complying with 21A.239:

a. The staff in all technical departments are of sufficient numbers and experience and have been given appropriate authority to be able to discharge their allocated responsibilities and that these, together with the accommodation, facilities and equipment are adequate to enable the staff to achieve the airworthiness, noise, fuel venting and exhaust emissions objectives for the product.
b. There is full and efficient coordination between departments and within departments in respect of airworthiness and environmental protection matters.

PRIVILEGES (21A.263)

a. The holder of a design organization approval shall be entitled to perform design activities under this Part and within its scope of approval.
b. Subject to 21A.257(b), compliance documents submitted by the applicant for the purpose of obtaining:
    - A type-certificate or approval of a major change to a type design; or
    - A supplemental type-certificate; or
    - An ETSO (European Technical Standard Orders) authorization under 21A.602 (b) (1);
    - A major repair design approval; shall be accepted by the Agency without further verification.
c. The holder of a design organization approval shall be entitled, within its terms of approval and under the relevant procedures of the design assurance system:
    - To classify changes to type design and repairs as 'major' or 'minor'.
    - To approve minor changes to type design and minor repairs.
    - To issue information or instructions containing the following statement: 'The technical content of this document is approved under the authority of DOA nr. [EASA]. J. [xyz].
    - To approve documentary changes to the aircraft flight manual, and issue such changes containing the following statement: 'Revision nr. xx to AFM ref. yyy, is approved under the authority of DOA nr.[EASA].J.[xyz].
    - To approve the design of major repairs to products for which it holds the type-certificate or the supplemental type-certificate.

DURATION AND CONTINUED VALIDITY (21A.259)

a. A design organization approval shall be issued for an unlimited duration. It shall remain valid unless:
    - The design organization fails to demonstrate compliance with the applicable requirements of this Subpart; or
    - The Agency is prevented by the holder or any of its partners or subcontractors to perform the investigations in accordance with 21A.257; or
    - There is evidence that the design assurance system cannot maintain satisfactory control and supervision of the design of products or changes thereof under the approval; or
    - The certificate has been surrendered or revoked under the applicable administrative procedures established by the Agency.
b. Upon surrender or revocation, the certificate shall be returned to the Agency.

DOCUMENTS

A Certificate of Airworthiness (CofA), or an airworthiness certificate, is issued for an aircraft by the national aviation authority in the state in which the aircraft is registered. The airworthiness certificate attests that the aircraft is airworthy insofar as the aircraft conforms to its type design. Each airworthiness certificate is issued in one of a number of different categories.

TYPE CERTIFICATES

SCOPE

A type certificate is issued to signify the airworthiness of an aircraft manufacturing design. The certificate is issued by a regulating body, and once issued, the design cannot be changed. The certificate reflects a determination made by the regulating body that the aircraft is manufactured according to an approved design, and that the design ensures compliance with airworthiness requirements. The regulating body compares design documents and processes to determine if the design meets requirements established for the type of equipment. Once issued, the aircraft "type" meets appropriate requirements. The determination process includes a step called "First Article Inspection", for it and for each of its subassemblies. This is a quality control assessment whereas those prior to it are part of quality assurance.

With respect to "cannot be changed": When a technician wants to change something it has two options. One is to request a Supplemental Type Certificate (STC), the other is to create an entirely different design. The choice is determined by considering whether or not the change constitutes a new design (ie. introduces risk not considered in the first design). If the manufacturer believes the change doesn't introduce new risk the manufacturer typically requests an STC. This is less expensive. If the regulatory authority agrees with the rationale for choosing STC, the STC is granted.

The type certificate (TC) implies that aircraft manufactured according to the approved design can be issued an Airworthiness Certificate. Examples of regulatory authorities are the Civil Aviation Authority (CAA), the Federal Aviation Administration (FAA) and the (European Aviation Safety Agency (EASA). To meet those requirements the aircraft and each sub-assembly must also be approved. When aircraft are produced to meet a given TC, each one need not be tested as rigorously but the confidence demonstrated by the TC is conferred, when the aircraft has been assigned an Airworthiness Certificate. (***Figure 5-7***)

An "Airworthiness Certificate" is issued for each aircraft that is properly registered if it conforms to its type design. The airworthiness certificate is valid and the aircraft may be operated as long as it is maintained in accordance with the rules issued by the regulatory authority.

European Aviation Safety Agency

TYPE-CERTIFICATE

EASA.A.006

This certificate, established in accordance with Regulations (EC) No 1592/2002 and (EC) No 1702/2003 and issued to

Costruzioni Aeronautiche TECNAM S.r.l.

Via Tasso, 478
80127 Napoli
Italia

certify that the aircraft type design listed below comply with the applicable Type Certification Basis and environmental protection requirements when operated within the conditions and limitations specified on the associated Type Certificate Data Sheet N°. A.006

Model	Date of issue
Tecnam P2002-JF	27 May, 2004
Tecnam P2002-JR	02 February, 2007

This certificate and its associated type-certificate data sheet, which is a part thereof, shall remain valid unless otherwise surrendered or revoked.

For the European Aviation Safety Agency,

Roger Hardy
Certification Manager
General Aviation

Figure 5-7. Example of a type certificate.

VALIDITY

The type certificate holder keeps the type certificate valid by continuously following airworthiness directives, issuing service bulletins and as well as providing spares and technical support to keep the aircraft current with the prevailing rules, even after the production of the type has stopped. This is what is meant by supporting the type and in this manner many out-of-production aircraft continue useful lives. STCs are also bound by the same rules. When the holder decides to stop supporting the aircraft type, the type certificate is returned to the regulators and the remaining aircraft fleet permanently grounded. In this manner the whole Concorde fleet was finally grounded when Airbus SAS surrendered its type certificate.

SUPPLEMENTAL TYPE CERTIFICATES

A supplemental type certificate (STC) is issued following a modification. The STC defines the product design change, states how the modification affects the existing type design, and lists serial number affectivity. It also identifies the certification basis listing specific regulatory

compliance for the design change. Information contained in the certification basis is helpful for those applicants proposing subsequent product modifications and evaluating certification basis compatibility with other STC modifications. (***Figure 5-8***)

Initially, the applicant firm submits documents to their local aviation regulating body, detailing how the proposed design, i.e., the 'Type', would fulfill the airworthiness requirements. After investigations by the regulator, the final approval of such documents (after the required comments and amendments in order to fulfill the laws), becomes the basis of the certification. The firm follows it and draws a proposed timetable of actions required for certification tests. With the application, the regulations to be applied will usually be frozen for this application for a given amount of time in order to avoid a situation where the applicant would have to change the design as a result of changed regulation.

European Aviation Safety Agency

SUPPLEMENTAL TYPE CERTIFICATE

EASA.IM.A.S.01042

This certificate, established in accordance with Regulations (EC) No 1592/2002 and (EC) No 1702/2003 and issued to:

JET Engineering, LLC
915 Camino Del Mar, Suite 100
Del Mar
California 92014
USA

certifies that the change in the type design for the product listed below with the limitations and conditions specified meets the applicable type certification basis and environmental protection requirements when operated within the conditions and limitations specified below:

Original Product Type Certificate number: *FAA A6WE*
Manufacturer: *McDonnell Douglas*
Model: *DC--9-81/-82/-83/-87, MD-88*
Original STC number: *FAA STC No. ST01542LA*

Description of Design Change:

FAA STC No. ST01542LA
Installation of JET Engineering, LLC Jet nozzles on the applicable models when powered by Pratt & Whitney JT8D-217/-219 engines.

Figure 5-8. Example of a supplemental type certificate.

An initial design sample known as a prototype is built. This refers to either the aircraft, the engines or the propeller, depending on the basis of the certification. For the purpose of illustration, the discussion shall be limited to the aircraft. Normally a few prototypes are built, each subject to different tests. The prototypes are first used for ground and system tests. One of the prototypes (known as the "static airframe") is subject to destructive testing, i.e., the prototype is subject to stress beyond normal and abnormal operations until destruction. The test-results are compared with initial submitted calculations to establish the ultimate structural strength.

Other prototypes will undergo other systems tests until the satisfaction of the regulators. With all ground tests completed, prototypes are made ready for flight tests. The flight tests are flown by specially approved flight test pilots who will fly the prototypes to establish the ultimate flight limits which should be within the airworthiness rules. If a long range airliner is tested, the flight tests may cover the whole world.

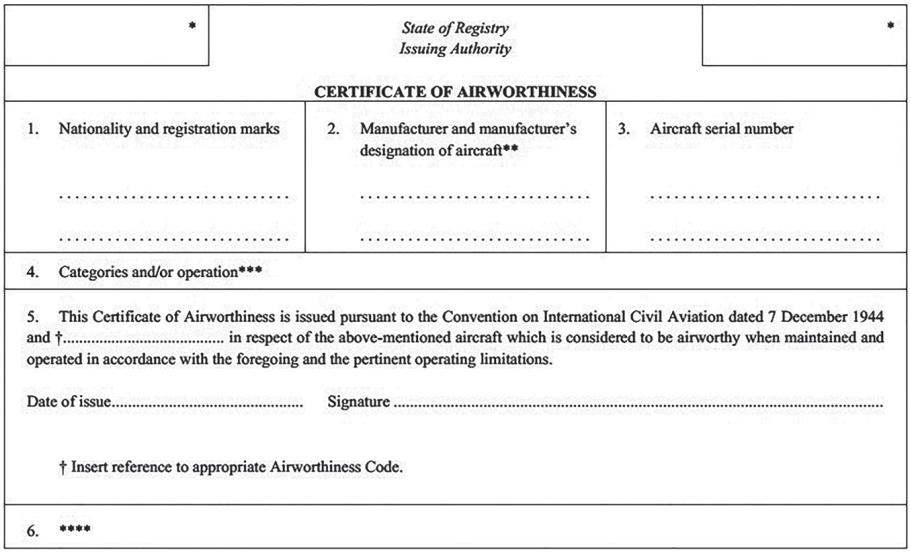
In parallel with aircraft testing, the applicant firm also draws up maintenance program to support continuous airworthiness after approval of the design. The program is drawn with inputs from tests results and also from initial customers' engineering departments. The proposed maintenance program is submitted to the regulators for comment and approval.

After successful completion of ground and flight tests, along with an approved maintenance program, the prototype is approved, and the firm is granted the type certificate for the prototype (as understood that it should include all furnished equipment for its intended role). The legal term for the firm is now the "type certificate holder". Subsequently the prototype now serves as a template for aircraft production. Hence the aircraft rolling out of the factory should be identical to the prototype, and each given a serial number (a "series aircraft").

CERTIFICATES OF AIRWORTHINESS

Airworthiness certificates shall be classified as follows: (***Figure 5-9***)

a. Certificates of airworthiness shall be issued to aircraft which conform to a type certificate that has been issued in accordance with this Part.
b. Restricted certificates of airworthiness shall be issued to aircraft:



*	*State of Registry* *Issuing Authority*	*

CERTIFICATE OF AIRWORTHINESS

1. Nationality and registration marks	2. Manufacturer and manufacturer's designation of aircraft**	3. Aircraft serial number
.....	.....	.....
.....	.....	.....

4. Categories and/or operation***

5. This Certificate of Airworthiness is issued pursuant to the Convention on International Civil Aviation dated 7 December 1944 and †..... in respect of the above-mentioned aircraft which is considered to be airworthy when maintained and operated in accordance with the foregoing and the pertinent operating limitations.

Date of issue..... Signature .....

† Insert reference to appropriate Airworthiness Code.

6. ****

Figure 5-9. Example of airworthiness certificate.

- Which conform to a restricted type certificate that has been issued in accordance with this Part; or
- Which have been shown to the Agency to comply with specific certification specifications ensuring adequate safety.

c. Permits to fly shall be issued to aircraft that do not meet, or have not been shown to meet, applicable certification specifications but are capable of safe flight under defined conditions.

d. Each application for a certificate of airworthiness or restricted certificate of airworthiness shall include:
   - The class of airworthiness certificate applied for;
   - With regard to new aircraft:
     - A statement of conformity:
   - Issued under 21A.163(b), or
   - Issued under 21A.130 and validated by the Competent Authority, or,
   - for an imported aircraft, a statement signed by the exporting authority that the aircraft conforms to a design approved by the Agency
     - A weight and balance report with a loading schedule.
     - The flight manual, when required by the applicable airworthiness code for the particular aircraft.

e. With regard to used aircraft:
   - Originating from a Member State, an airworthiness review certificate issued in accordance with Part-M.
   - Originating from a non-Member State:
     - A statement by the competent authority of the State where the aircraft is, or was, registered, reflecting the airworthiness status of the aircraft on its register at time of transfer.
     - A weight and balance report with a loading schedule.
     - The flight manual when such material is required by the applicable airworthiness code for the particular aircraft.
     - Historical records to establish the production, modification, and maintenance standard of the aircraft, including all limitations associated with a restricted certificate of airworthiness under 21A.184(c).
     - A recommendation for the issuance of a certificate of airworthiness or restricted certificate of airworthiness and an airworthiness review certificate following an airworthiness review in accordance with Part-M.

An airworthiness certificate shall be issued for an unlimited duration. It shall remain valid subject to:
- Compliance with the applicable type-design and continuing airworthiness requirements; and
- The aircraft remaining on the same register; and
- The type-certificate or restricted type-certificate under which it is issued not being previously invalidated under 21A.51.
- The certificate not being surrendered or revoked under 21B.330.

RESTRICTED CERTIFICATES OF AIRWORTHINESS

a. The competent authority of the Member State of registry shall issue a restricted certificate of airworthiness for: (***Figure 5-10***)
   - New aircraft, upon presentation of the documentation required by 21A.174(b)(2) demonstrating that the aircraft conforms to a design approved by the Agency under a restricted type-certificate or in accordance with specific certification specifications, and is in condition for safe operation.
   - Used aircraft, upon presentation of the documentation required by 21A.174(b)(3) demonstrating:
     - The aircraft conforms to a design approved by the Agency under a restricted type certificate or in accordance with specific certification specifications, and
     - The applicable airworthiness directives have been complied with, and
     - The aircraft has been inspected in accordance with the appropriate provisions of Part-M;
     - When the competent authority of the Member State of registry is satisfied that the aircraft conforms to the approved design and is in condition for safe operation. This may include inspections by the competent authority of the Member State of registry.

b. For an aircraft that cannot comply with the essential requirements referred to in the basic Regulation and which is not eligible for a restricted type-certificate, the Agency shall, as necessary to take account of deviations from these essential requirements:
   - Issue and check compliance with specific certification specifications ensuring adequate safety with regard to the intended use, and
   - Specify limitations for use of this aircraft.

c. Limitations for use will be associated with restricted certificates of airworthiness including airspace restrictions as necessary to take account of deviations from essential requirements for airworthiness laid down in the basic Regulation.

PERMITS TO FLY

The competent authority of the Member State of registry shall issue a permit to fly after the Agency has found that the aircraft and appropriate associated restrictions compensating for departure from the essential requirements permit the aircraft to perform safely a basic flight. For that purpose, the Agency may make or require the applicant to make appropriate inspections or tests necessary to ensure safety. (***Figure 5-11***)

AIRCRAFT REGISTRATION

An aircraft registration is a unique alphanumeric string that identifies a civil aircraft, in similar fashion to a license plate on an automobile. In accordance with the Convention on International Civil Aviation all aircraft must be registered with a national aviation authority and they must carry proof of this registration in the form of a legal document called a Certificate of Registration at all times when in operation. Most countries also require the aircraft registration to be imprinted on a permanent fireproof plate mounted on the fuselage for the purposes of post-fire/post-crash aircraft accident investigation.

The first use of aircraft registrations was based on the radio call signs allocated at the London International Radiotelegraphic Conference in 1913. This was modified by agreement by the International Bureau at Berne and published on April 23, 1913. Although initial allocations were not specifically for aircraft but for any radio user, the International Air Navigation Convention held in Paris in 1919 made allocations specifically for aircraft registrations, based on the 1913 call sign list. The agreement stipulated that the nationality marks were to be followed by a hyphen then a group of four letters that must include a vowel (and for the convention Y was considered to be a vowel).

At the International Radiotelegraph Convention at Washington in 1927, the list of markings was revised and adopted from 1928; these allocations are the basis of the currently used registrations. The markings have been amended and added to over the years, and the allocations and standard are managed by the International Civil Aviation Organization (ICAO).

Article 20 of the Chicago Convention on International Civil Aviation (signed in 1944) requires that all signatory countries register aircraft over a certain weight with a national aviation authority. Upon registration, the aircraft receives its unique "registration", which must be displayed prominently on the aircraft.

Annex 7 to the Convention on International Civil Aviation describes the definitions, location, and measurement of nationality and registration marks.

Competent authority LOGO

RESTRICTED CERTIFICATE OF AIRWORTHINESS

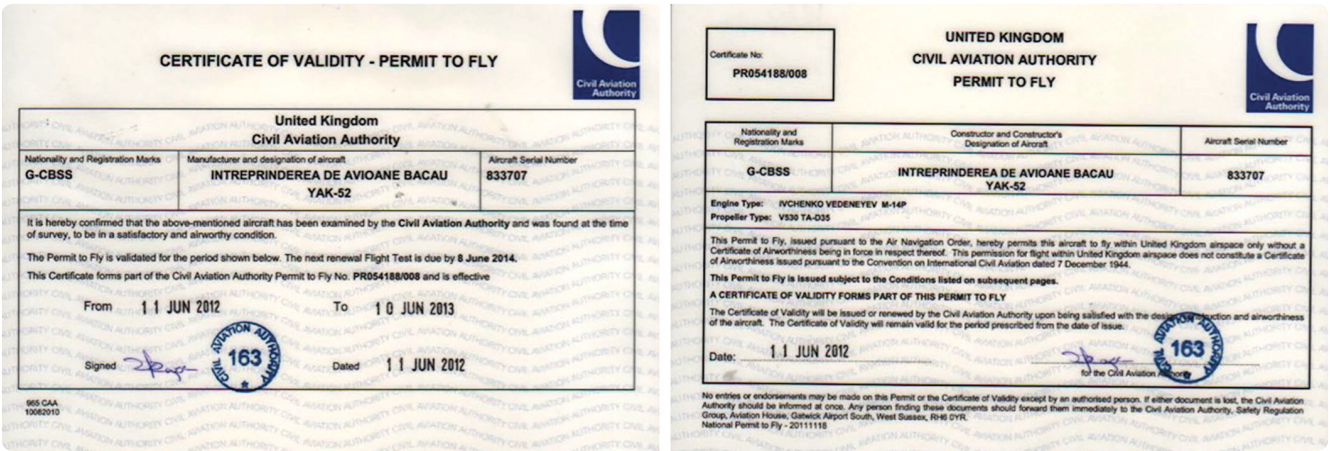
(1)	[Member State of registry] [COMPETENT AUTHORITY OF THE MEMBER STATE]	(2)
1. Nationality and registration marks	2. Manufacturer and manufacturer's designation of aircraft	3. Aircraft serial number
4. Categories		
5. This Certificate of Airworthiness is issued pursuant to (3) [the Convention of International Civil Aviation dated 7 December 1944] and Regulation (EC) No 216/2008. Article 5(4)(b) in respect of the abovementioned aircraft which is considered to be airworthy when maintained and operated in accordance with the foregoing and the pertinent operating limitations. In addition to above the following restrictions apply: (4) (5) [The aircraft may be used in international navigation notwithstanding above restrictions].		
Date of issue: Signature:		
6. This Restricted Certificate of Airworthiness is valid unless revoked by the competent authority of the Member State of registry. A current Airworthiness Review Certificate shall be attached to this certificate.		

EASA Form 24 Issue 2.

This certificate shall be carried on board during all flights

(1) For use by the State of Registry.
(2) For use by the State of Registry.
(3) Delete as applicable.
(4) For use by the State of Registry.
(5) Delete as applicable.

Figure 5-10. Example of restricted airworthiness certificate.



CERTIFICATE OF VALIDITY - PERMIT TO FLY

United Kingdom
Civil Aviation Authority

Nationality and Registration Marks	Manufacturer and designation of aircraft	Aircraft Serial Number
G-CBSS	INTREPRINDEREA DE AVIOANE BACAU YAK-52	833707

It is hereby confirmed that the above-mentioned aircraft has been examined by the **Civil Aviation Authority** and was found at the time of survey, to be in a satisfactory and airworthy condition.

The Permit to Fly is validated for the period shown below. The next renewal Flight Test is due by **8 June 2014.**

This Certificate forms part of the Civil Aviation Authority Permit to Fly No. **PR054188/008** and is effective

From 11 JUN 2012 To 10 JUN 2013

Signed Dated 11 JUN 2012

965 CAA 10062010

Certificate No: PR054188/008

UNITED KINGDOM
CIVIL AVIATION AUTHORITY
PERMIT TO FLY

Nationality and Registration Marks	Constructor and Constructor's Designation of Aircraft	Aircraft Serial Number
G-CBSS	INTREPRINDEREA DE AVIOANE BACAU YAK-52	833707

Engine Type: IVCHENKO VEDENEYEV M-14P
Propeller Type: V530 TA-D35

This Permit to Fly, issued pursuant to the Air Navigation Order, hereby permits this aircraft to fly within United Kingdom airspace only without a Certificate of Airworthiness being in force in respect thereof. This permission for flight within United Kingdom airspace does not constitute a Certificate of Airworthiness issued pursuant to the Convention on International Civil Aviation dated 7 December 1944.

This Permit to Fly is issued subject to the Conditions listed on subsequent pages.

A CERTIFICATE OF VALIDITY FORMS PART OF THIS PERMIT TO FLY

The Certificate of Validity will be issued or renewed by the Civil Aviation Authority upon being satisfied with the design, construction and airworthiness of the aircraft. The Certificate of Validity will remain valid for the period prescribed from the date of issue.

Date: 11 JUN 2012

for the Civil Aviation Authority

No entries or endorsements may be made on this Permit or the Certificate of Validity except by an authorised person. If either document is lost, the Civil Aviation Authority should be informed at once. Any person finding these documents should forward them immediately to the Civil Aviation Authority, Safety Regulation Group, Aviation House, Gatwick Airport South, West Sussex, RH6 0YR.
National Permit to Fly - 20111118

Figure 5-11. Examples of permits to fly.

The aircraft registration is made up of a prefix selected from the country's call sign prefix allocated by the International Telecommunication Union (ITU) (making the registration a quick way of determining the country of origin) and the registration suffix. Depending on the country of registration, this suffix is a numeric or alphanumeric code, and consists of one to five digits or characters respectively.

The ICAO provides a supplement to Annex 7 which provides an updated list of approved Nationality and Common Marks used by various countries. (***Figure 5-12***)

NOISE CERTIFICATION

The ICAO has stipulated that all aircrafts must comply with certain noise requirements. Aircrafts must respect a noise threshold defined and if not they could be forbidden to fly over certain areas. In the past some aircrafts equipped with old jet engines had to retro-fitted with noise reduction devices (Hush kits).

The EASA has formalized noise requirements in Certification Specifications for Aircraft Noise - CS-36. These requirements make references to the ICAO Environmental Technical Manual on the *Use of Procedures in the Noise Certification of Aircraft,* CAEP Steering Group Approved Revision 7.

For new aircraft, the noise certification is carried out during the type certification process. Noise measurement must be taken from various points and locations prescribed by the regulation. (***Figure 5-13***)

There are three measures:

- Approach measurement.
- Takeoff measurement.
- Lateral reference point measurement.

The maximum mass at which the noise compliance has been demonstrated must be stated on the noise certificate.

Figure 5-12. Example of national aircraft registration prefixes; SX for Greece, UP for Kazakhstan, N for United States.

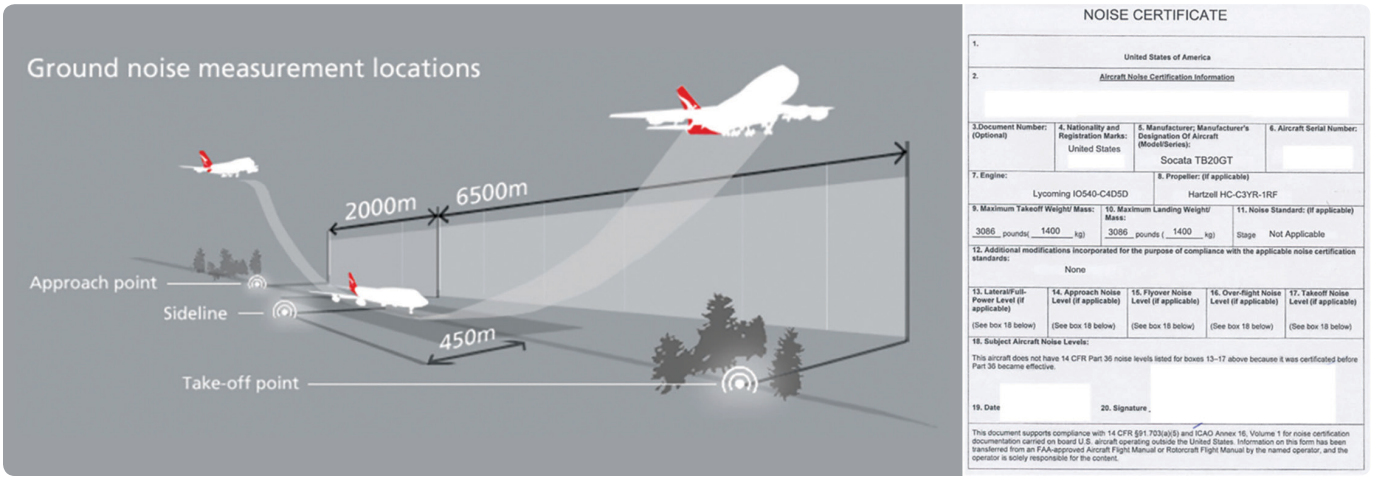


Figure 5-13. Ground noise measurement locations, example of a noise certificate.

WEIGHT SCHEDULE

a. An operator shall ensure that during any phase of operation, the loading, mass and centre of gravity of the airplane complies with the limitations specified in the approved Airplane Flight Manual, or the Operations Manual if more restrictive.

b. An operator must establish the mass and the center of gravity of any airplane by actual weighing prior to initial entry into service and thereafter at intervals of 4 years if individual airplane masses are used and 9 years if fleet masses are used. The accumulated effects of modifications and repairs on the mass and balance must be accounted for and properly documented. Furthermore, airplanes must be reweighed if the effect of modifications on the mass and balance is not accurately known.

c. An operator must determine the mass of all operating items and crew members included in the airplane dry operating mass by weighing or by using standard masses. The influence of their position on the airplane center of gravity must be determined.

d. An operator must establish the mass of the traffic load, including any ballast, by actual weighing or determine the mass of the traffic load in accordance with standard passenger and baggage masses as specified in OPS 1.620.

e. An operator must determine the mass of the fuel load by using the actual density or, if not known, the density calculated in accordance with a method specified in the Operations Manual.

MASS AND BALANCE DOCUMENTATION (AIR OPERATIONS 1.625)

a. An operator shall establish mass and balance documentation prior to each flight specifying the load and its distribution. The mass and balance documentation must enable the commander to determine that the load and its distribution is such that the mass and balance limits of the airplane are not exceeded. The person preparing the mass and balance documentation must be named on the document. The person supervising the loading of the airplane must confirm by signature that the load and its distribution are in accordance with the mass and balance documentation. This document must be acceptable to the commander, his/her acceptance being indicated by countersignature or equivalent.

b. An operator must specify procedures for last minute changes to the load.

c. Subject to the approval of the Authority, an operator may use an alternative to the procedures required by paragraphs (a) and (b) above.

d. Determination of the Dry Operating Mass of an Airplane;

- New airplanes are normally weighed at the factory and are eligible to be placed into operation without reweighing if the mass and balance records have been adjusted for alterations or modifications to the airplane. Airplanes transferred from one operator with

Figure 5-14. Example of Radiotelephony Operator's License.

an approved mass control program to another operator with an approved program need not be weighed prior to use by the receiving operator unless more than 4 years have elapsed since the last weighing.

- The individual mass and center of gravity (CG) position of each airplane shall be re-established periodically. The maximum interval between two weighings must be defined by the operator and must meet the requirements of OPS 1.605 (b). In addition, the mass and the CG of each airplane shall be re-established either by:
  - Weighing; or
  - Calculation, if the operator is able to provide the necessary justification to prove the validity of the method of calculation chosen, whenever the cumulative changes to the dry operating mass exceed ±0.5% of the maximum landing mass of the cumulative change in CG position exceeds 0.5% of the mean aerodynamic chord.

Mass and balance documentation must contain the following information:

- The airplane registration and type;
- The flight identification number and date;
- The identity of the Commander;
- The identity of the person who prepared the document;
- The dry operating mass and the corresponding CG of the airplane;
- The mass of the fuel at takeoff and the mass of trip fuel;
- The mass of consumables other than fuel;
- The components of the load including passengers, baggage, freight and ballast;
- Take-off Mass, Landing Mass and Zero Fuel Mass;
- The load distribution;
- The applicable airplane CG positions; and
- The limiting mass and CG values.

RADIO STATION LICENSE AND APPROVAL

The requirement to have radio licenses originate from the International Telecommunication Union (ITU), an international organization responsible to manage the allocation of radio frequencies. They are also responsible to regulate the use of transmitting equipment with a view to ensure they operate within acceptable tolerances. (***Figure 5-14***)

The Convention on International Civil Aviation requires (Article 30) that the transmitting equipment be installed and operated in an aircraft in accordance with a radio license and that (Article 29) the radio license be carried on board the aircraft.

The ICAO documents do not provide a detailed listing of equipment to be mentioned on a radio license. However, all transmitting radio equipment (VHF, HF, ELT, radar, etc.) installed on an aircraft should be covered in the radio license.

APPROVAL

Approval will be in accordance with the national authorities regulations of the country of the applicant.

Question: 5-1
An engine-driven fixed-wing aircraft heavier than air that is supported in flight by the dynamic reaction of the air against its wings is the definition of an _____?

Question: 5-2
_____ of Part 21 establishes the procedure for issuing type-certificates for products and restricted type-certificates for aircraft, and establishes the rights and obligations of the applicants for, and holders of, those certificates.

Question: 5-3
The holder of a production organization approval was required to submit an _____ to the Agency to gain such approval and to use as a basic working document within the organization.

Question: 5-4
_____ shall be issued to aircraft that do not meet, or have not been shown to meet, applicable certification specifications but are capable of safe flight under defined conditions.

Question: 5-5
An aircraft _____ is a unique alphanumeric string that identifies a civil aircraft.

Question: 5-6
The three measurements taken during noise certification of an aircraft are _____, _____, and _____ measurements.

Question: 5-7
The international organization responsible for managing the allocation of radio frequencies is the _____ _____ _____.

ANSWERS

Answer: 5-1
airplane.

Answer: 5-2
Subpart-B.

Answer: 5-3
exposition.

Answer: 5-4
Permits to fly.

Answer: 5-5
registration.

Answer: 5-6
approach.
takeoff.
lateral reference point.

Answer: 5-7
International Telecommunications Union.

PART-66 SYLLABUS **LEVELS**

CERTIFICATION CATEGORY →	B1	B2

Sub-Module 06
CONTINUING AIRWORTHINESS
Knowledge Requirements

10.6 – Continuing Airworthiness		
Detailed understanding of Part-21 provisions related to continuing airworthiness.	2	2
Detailed understanding of Part-M.		

Level 2
A general knowledge of the theoretical and practical aspects of the subject and an ability to apply that knowledge.

Objectives:

(a) The applicant should be able to understand the theoretical fundamentals of the subject.
(b) The applicant should be able to give a general description of the subject using, as appropriate, typical examples.
(c) The applicant should be able to use mathematical formula in conjunction with physical laws describing the subject.
(d) The applicant should be able to read and understand sketches, drawings and schematics describing the subject.
(e) The applicant should be able to apply his knowledge in a practical manner using detailed procedures.

PART 21 GENERAL PROVISIONS

SCOPE

General provisions governing the rights and obligations of the applicant for, and holder of, any certificate issued or to be issued in accordance.

UNDERTAKING

The actions and obligations required to be undertaken by the holder of, or applicant for, a certificate for a product, part or appliance under this Section may be undertaken on its behalf by any other natural or legal person, provided the holder of, or applicant for, that certificate can show that it has made an agreement with the other person such as to ensure that the holder's obligations are and will be properly discharged.

FAILURES, MALFUNCTIONS AND DEFECTS

a. System for Collection, Investigation and Analysis of Data.
   - The holder of a type-certificate, restricted type-certificate, supplemental type-certificate, European Technical Standard Order (ETSO) authorization, major repair design approval or any other relevant approval deemed to have been issued under this Regulation shall have a system for collecting, investigating and analyzing reports of and information related to failures, malfunctions, defects or other occurrences which cause or might cause adverse effects on the continuing airworthiness of the product, part or appliance covered by the type-certificate, restricted type-certificate, supplemental type-certificate, ETSO authorization, major repair design approval or any other relevant approval deemed to have been issued under this Regulation. Information about this system shall be made available to all known operators of the product, part or appliance and, on request, to any person authorized under other associated implementing Regulations.

b. Reporting to the Agency.
   - The holder of a type-certificate, restricted type-certificate, supplemental type-certificate, ETSO authorization, major repair design approval or any other relevant approval deemed to have been issued under this Regulation shall report to the Agency any failure, malfunction, defect or other occurrence of which it is aware related to a product, part, or appliance covered by the type-certificate, restricted type-certificate, supplemental type-certificate, ETSO authorization, major repair design approval or any other relevant approval deemed to have been issued under this Regulation, and which has resulted in or may result in an unsafe condition.
   - These reports shall be made in a form and manner established by the Agency, as soon as practical and in any case dispatched not later than 72 hours after the identification of the possible unsafe condition, unless exceptional circumstances prevent this.

c. Investigation of Reported Occurrences.
   - When an occurrence reported under paragraph (b), or under 21A.129(f)(2) or 21A.165(f) (2) results from a deficiency in the design, or a manufacturing deficiency, the holder of the type-certificate, restricted type-certificate, supplemental type-certificate, major repair design approval, ETSO authorization, or any other relevant approval deemed to have been issued under this Regulation, or the manufacturer as appropriate, shall investigate the reason for the deficiency and report to the Agency the results of its investigation and any action it is taking or proposes to take to correct that deficiency.
   - If the Agency finds that an action is required to correct the deficiency, the holder of the type-certificate, restricted type-certificate, supplemental type-certificate, major repair design approval, ETSO authorization, or any other relevant approval deemed to have been issued under this Regulation, or the manufacturer as appropriate, shall submit the relevant data to the Agency.

AIRWORTHINESS DIRECTIVES

a. An airworthiness directive means a document issued or adopted by the Agency which mandates actions to be performed on an aircraft to restore an acceptable level of safety, when evidence shows that the safety level of this aircraft may otherwise be compromised.

b. The Agency shall issue an airworthiness directive when:
   - An unsafe condition has been determined by the Agency to exist in an aircraft, as a result of a deficiency in the aircraft, or an engine, propeller, part or appliance installed on this aircraft; and
   - That condition is likely to exist or develop in other aircraft.

c. When an airworthiness directive has to be issued by the agency to correct the unsafe condition referred to in paragraph B or to require the performance of an inspection, the holder of the type-certificate, restricted type-certificate, supplemental type-certificate, major repair design approval, ETSO authorization or any other relevant approval deemed to have been issued under this Regulation, shall:
   - Propose the appropriate corrective action or required inspections, or both, and submit details of these proposals to the Agency for approval.
   - Following the approval by the Agency of the proposals referred to under subparagraph (1), make available to all known operators or owners of the product, part or appliance and, on request, to any person required to comply with the airworthiness directive, appropriate descriptive data and accomplishment instructions.

d. An airworthiness directive shall contain at least the following information:
   - An identification of the unsafe condition;
   - An identification of the affected aircraft;
   - The action(s) required;
   - The compliance time for the required action(s);
   - The date of entry into force.

PART-M

The purpose of the Part-M is to define the role of the competent authority which shall be for the:
- Oversight of the continuing airworthiness of individual aircraft and the issue of airworthiness review certificates;
- Oversight of a maintenance organization as specified in M.A. Subpart-F;
- Oversight of a continuing airworthiness management organization as specified in M.A. Subpart-G;
- Approval of maintenance programs.

GENERAL – SUBPART-A

SCOPE (MA 101)

This Section establishes the measures to be taken to ensure that airworthiness is maintained, including maintenance. It also specifies the conditions to be met by the persons or organizations involved in such continuing airworthiness management.

ACCOUNTABILITY – SUBPART-B

RESPONSIBILITIES (MA 201)

a. The owner is responsible for the continuing airworthiness of an aircraft and shall ensure that no flight takes place unless:
   1. The aircraft is maintained in an airworthy condition, and;
   2. Any operational and emergency equipment fitted is correctly installed and serviceable or clearly identified as unserviceable, and;
   3. The airworthiness certificate remains valid, and;
   4. The maintenance of the aircraft is performed in accordance with the approved maintenance program as specified in M.A.302.

b. When the aircraft is leased, the responsibilities of the owner are transferred to the lessee if:
   1. The lessee is stipulated on the registration document, or;
   2. Detailed in the leasing contract. When reference is made in this Part to the 'owner', the term owner covers the owner or the lessee, as applicable.

c. Any person or organization performing maintenance shall be responsible for the tasks performed.

d. The pilot-in-command or, in the case of commercial air transport, the operator shall be responsible for the satisfactory accomplishment of the pre-flight inspection. This inspection must be carried out by the pilot or another qualified person but need not be carried out by an approved maintenance organization or by Part-66 certifying staff.

e. In order to satisfy the responsibilities of paragraph (a),

f. The owner of an aircraft may contract the tasks associated with continuing airworthiness to a continuing airworthiness management organization approved in accordance with Section A, Subpart-G of this Annex (Part-M). In this case, the continuing airworthiness management organization assumes responsibility for the proper accomplishment of these tasks.

g. An owner who decides to manage the continuing airworthiness of the aircraft under its own responsibility, without a contract in accordance with Appendix I, may nevertheless make a limited contract with a continuing airworthiness management organization approved in accordance with Section A, Subpart-G of this Annex (Part-M), for the development of the maintenance program and its approval in accordance with point M.A.302. In that case, the limited contract transfers the responsibility for the development and approval of the maintenance program to the contracted continuing airworthiness management organization.

h. In the case of large aircraft, in order to satisfy the responsibilities of paragraph (a) the owner of an aircraft shall ensure that the tasks associated with continuing airworthiness are performed by an approved continuing airworthiness management organization. A written contract shall be made in accordance with Appendix I. In this case, the continuing airworthiness management organization assumes responsibility for the proper accomplishment of these tasks.

i. Maintenance of large aircraft, aircraft used for commercial air transport and components thereof shall be carried out by a Part-145 approved maintenance organization.

j. In the case of commercial air transport the operator is responsible for the continuing airworthiness of the aircraft it operates and shall:
   1. Be approved, as part of the air operator certificate issued by the competent authority, pursuant to M.A. Subpart-G for the aircraft it operates; and
   2. Be approved in accordance with Part-145 or contract such an organization; and
   3. Ensure that paragraph (a) is satisfied.

k. When an operator is requested by a Member State to hold a certificate for commercial operations, other than for commercial air transport, it shall:

l. Be appropriately approved, pursuant to M.A. Subpart-G, for the management of the continuing airworthiness of the aircraft it operates or contract such an organization; and
   1. Be appropriately approved in accordance with M.A. Subpart-F or Part-145, or contract such organizations; and
   2. Ensure that paragraph (a) is satisfied.

m. The owner/operator is responsible for granting the competent authority access to the organization/ aircraft to determine continued compliance with this Part.

OCCURENCE REPORTING (MA 202)

a. Any person or organization responsible in accordance with point M.A.201 shall report to the competent authority designated by the State of Registry, the organization responsible for the type design or supplemental type design and, if applicable, the Member State of operator, any identified condition of an aircraft or component which endangers flight safety.

b. Reports shall be made in a manner established by the Agency and contain all pertinent information about the condition known to the person or organization.

c. Where the person or organization maintaining the aircraft is contracted by an owner or an operator to carry out maintenance, the person or the organization maintaining the aircraft shall also report to the owner, the operator or the continuing airworthiness management organization any such condition affecting the owner's or the operator's aircraft or component.

d. Reports shall be made as soon as practicable, but in any case within 72 hours of the person or organization identifying the condition to which the report relates.

CONTINUING AIRWORTHINESS - SUBPART-C

CONTINUING AIRWORTHINESS TASKS (MA 301)

The aircraft continuing airworthiness and the serviceability of both operational and emergency equipment shall be ensured by:

a. The accomplishment of pre-flight inspections;

b. The rectification in accordance with the data specified in point M.A.304 and/or point M.A.401, as applicable, of any defect and damage affecting

safe operation, taking into account, for all large aircraft or aircraft used for commercial air transport, the minimum equipment list and configuration deviation list as applicable to the aircraft type';

c. The accomplishment of all maintenance, in accordance with the M.A.302 approved aircraft maintenance program;
d. For all large aircraft or aircraft used for commercial air transport the analysis of the effectiveness of the M.A.302 approved maintenance program;
e. The accomplishment of any applicable:
    1. Airworthiness directive,
    2. Operational directive with a continuing airworthiness impact,
    3. Continued airworthiness requirement established by the Agency,
    4. Measures mandated by the competent authority in immediate reaction to a safety problem;
f. The accomplishment of modifications and repairs in accordance with M.A.304;
g. For non-mandatory modifications and/or inspections, for all large aircraft or aircraft used for commercial air transport the establishment of an embodiment policy; 8. maintenance check flights when necessary.

MAINTENANCE PROGRAM (MA 302)

a. Maintenance of each aircraft shall be organized in accordance with an aircraft maintenance program.
b. The aircraft maintenance program and any subsequent amendments shall be approved by the competent authority.
c. When the continuing airworthiness of the aircraft is managed by a continuing airworthiness management organization approved in accordance with Section A, Subpart-G of this Annex (Part-M), the aircraft maintenance program and its amendments may be approved through an indirect approval procedure.
    1. In that case, the indirect approval procedure shall be established by the continuing airworthiness management organization as part of the Continuing Airworthiness Management Exposition and shall be approved by the competent authority responsible for that continuing airworthiness management organization.
    2. The continuing airworthiness management organization shall not use the indirect approval procedure when this organization is not under the oversight of the Member State of Registry, unless an agreement exists in accordance with point M.1, paragraph 4(ii) or 4(iii), as applicable, transferring the responsibility for the approval of the aircraft maintenance program to the competent authority responsible for the continuing airworthiness management organization.
d. The aircraft maintenance program must establish compliance with:
    1. Instructions issued by the competent authority;
    2. Instructions for continuing airworthiness issued by the holders of the type certificate, restricted type certificate, supplemental type-certificate, major repair design approval, ETSO authorization or any other relevant approval issued under Regulation (EC) No 1702/2003 and its Annex (Part-21);
    3. Additional or alternative instructions proposed by the owner or the continuing airworthiness management organization once approved in accordance with point M.A.302, except for intervals of safety related tasks referred in paragraph (e), which may be escalated, subject to sufficient reviews carried out in accordance with paragraph (g) and only when subject to direct approval in accordance with point M.A.302(b).
e. The aircraft maintenance program shall contain details, including frequency, of all maintenance to be carried out, including any specific tasks linked to the type and the specificity of operations.
f. For large aircraft, when the maintenance program is based on maintenance steering group logic or on condition monitoring, the aircraft maintenance program shall include a reliability program.
g. The aircraft maintenance program shall be subject to periodic reviews and amended accordingly when necessary. These reviews shall ensure that the program continues to be valid in light of the operating experience and instructions from the competent authority whilst taking into account new and/or modified maintenance instructions promulgated by the type certificate and supplementary type certificate holders and any other organization that publishes such data in accordance with Annex (Part-21) to Regulation (EC) No 1702/2003.

AIRWORTHINESS DIRECTIVES (MA 303)

Any applicable airworthiness directive must be carried out within the requirements of that airworthiness directive, unless otherwise specified by the Agency.

DATA FOR MODIFICATIONS AND REPAIRS (MA 304)

Damage shall be assessed and modifications and repairs carried out using data approved by the Agency or by an approved Part-21 design organization, as appropriate.

AIRCRAFT CONTINUING AIRWORTHINESS RECORD SYSTEM (MA 305)

a. At the completion of any maintenance, the certificate of release to service required by point M.A.801 or point 145.A.50 shall be entered in the aircraft continuing airworthiness records. Each entry shall be made as soon as practicable but in no case more than 30 days after the day of the maintenance action.
b. The aircraft continuing airworthiness records shall consist of:
    1. An aircraft logbook, engine logbook(s) or engine module log cards, propeller logbook(s) and log cards for any service life limited component as appropriate, and;
    2. When required in point M.A.306 for commercial air transport or by the Member State for commercial operations other than commercial air transport, the operator's technical log.
c. The aircraft type and registration mark, the date, together with total flight time and/or flight cycles and/or landings, as appropriate, shall be entered in the aircraft logbooks.
d. The aircraft continuing airworthiness records shall contain the current:
    1. Status of airworthiness directives and measures mandated by the competent authority in immediate reaction to a safety problem;
    2. Status of modifications and repairs;
    3. Status of compliance with maintenance program;
    4. Status of service life limited components;
    5. Mass and balance report;
    6. List of deferred maintenance.
e. In addition to the authorized release document, EASA Form 1 or equivalent, the following information relevant to any component installed (engine, propeller, engine module or service life-limited component) shall be entered in the appropriate engine or propeller logbook, engine module or service life limited component log card:
    1. Identification of the component; and
    2. The type, serial number and registration, as appropriate, of the aircraft, engine, propeller, engine module or service life-limited component to which the particular component has been fitted, along with the reference to the installation and removal of the component; and
    3. The date together with the component's accumulated total flight time and/or flight cycles and/or landings and/or calendar time, as appropriate; and
    4. The current paragraph (d) information applicable to the component.
f. The person responsible for the management of continuing airworthiness tasks pursuant to M.A. Subpart-B, shall control the records as detailed in this paragraph and present the records to the competent authority upon request.
g. All entries made in the aircraft continuing airworthiness records shall be clear and accurate. When it is necessary to correct an entry, the correction shall be made in a manner that clearly shows the original entry.

OWNER AND/OR THE OPERATOR OBLIGATIONS (MA 306)

An owner or operator shall ensure that a system has been established to keep the following records for the periods specified:

1. All detailed maintenance records in respect of the aircraft and any service life-limited component fitted thereto, until such time as the information contained therein is superseded by new information equivalent in scope and detail but not less than 36 months after the aircraft or component has been released to service; and
2. The total time in service (hours, calendar time, cycles and landings) of the aircraft and all service life-limited components, at least 12 months after the aircraft or component has been permanently withdrawn from service; and
3. The time in service (hours, calendar time, cycles and landings) as appropriate, since last scheduled maintenance of the component subjected to a service life limit, at least until the component scheduled maintenance has been superseded by another scheduled maintenance of equivalent work scope and detail; and

4. The current status of compliance with maintenance program such that compliance with the approved aircraft maintenance program can be established, at least until the aircraft or component scheduled maintenance has been superseded by other scheduled maintenance of equivalent work scope and detail; and
5. The current status of airworthiness directives applicable to the aircraft and components, at least 12 months after the aircraft or component has been permanently withdrawn from service; and
6. Details of current modifications and repairs to the aircraft, engine(s), propeller(s) and any other component vital to flight safety, at least 12 months after they have been permanently withdrawn from service.

OPERATOR TECHNICAL LOG SYSTEM (MA 306)

a. In the case of commercial air transport, in addition to the requirements of M.A.305, an operator shall use an aircraft technical log system containing the following information for each aircraft:
   1. Information about each flight, necessary to ensure continued flight safety, and;
   2. The current aircraft certificate of release to service, and;
   3. The current maintenance statement giving the aircraft maintenance status of what scheduled and out of phase maintenance is next due except that the competent authority may agree to the maintenance statement being kept elsewhere, and;
   4. All outstanding deferred defects rectifications that affect the operation of the aircraft, and;
   5. Any necessary guidance instructions on maintenance support arrangements.

b. The aircraft technical log system and any subsequent amendment shall be approved by the competent authority.

c. An operator shall ensure that the aircraft technical log is retained for 36 months after the date of the last entry.

MAINTENANCE STANDARDS – SUBPART-D

MAINTENANCE DATA (MA 401)

a. The person or organization maintaining an aircraft shall have access to and use only applicable current maintenance data in the performance of maintenance including modifications and repairs.

b. For the purposes of this Part, applicable maintenance data is:
   1. Any applicable requirement, procedure, standard or information issued by the competent authority or the Agency,
   2. Any applicable airworthiness directive,
   3. Applicable instructions for continuing airworthiness, issued by type certificate holders, supplementary type certificate holders and any other organization that publishes such data in accordance with Part 21.
   4. Any applicable data issued in accordance with 145.A.45(d).

c. The person or organization maintaining an aircraft shall ensure that all applicable maintenance data is current and readily available for use when required. The person or organization shall establish a work card or worksheet system to be used and shall either transcribe accurately the maintenance data onto such work cards or worksheets or make precise reference to the particular maintenance task or tasks contained in such maintenance data.

PERFORMANCE OF MAINTENANCE (MA 402)

a. All maintenance shall be performed by qualified personnel, following the methods, techniques, standards and instructions specified in the M.A.401 maintenance data. Furthermore, an independent inspection shall be carried out after any flight safety sensitive maintenance task unless otherwise specified by Part-145 or agreed by the competent authority.

b. All maintenance shall be performed using the tools, equipment and material specified in the M.A.401 maintenance data unless otherwise specified by Part-145. Where necessary, tools and equipment shall be controlled and calibrated to an officially recognized standard.

c. The area in which maintenance is carried out shall be well organized and clean in respect of dirt and contamination.

d. All maintenance shall be performed within any environmental limitations specified in the M.A.401 maintenance data.

e. In case of inclement weather or lengthy maintenance, proper facilities shall be used.

f. After completion of all maintenance a general verification must be carried out to ensure the aircraft or component is clear of all tools, equipment and any other extraneous parts and material, and that all access panels removed have been refitted.

AIRCRAFT DEFECTS (MA 403)

a. Any aircraft defect that hazards seriously the flight safety shall be rectified before further flight.
b. Only the authorized certifying staff, according to points M.A.801(b)1, M.A.801(b)2, M.A.801(c), M.A.801(d) or Annex II (Part-145) can decide, using M.A.401 maintenance data, whether an aircraft defect hazards seriously the flight safety and therefore decide when and which rectification action shall be taken before further flight and which defect rectification can be deferred. However, this does not apply when:
    1. The approved minimum equipment list as mandated by the competent authority is used by the pilot; or,
    2. Aircraft defects are defined as being acceptable by the competent authority.
c. Any aircraft defect that would not hazard seriously the flight safety shall be rectified as soon as practicable, after the date the aircraft defect was first identified and within any limits specified in the maintenance data.
d. Any defect not rectified before flight shall be recorded in the M.A.305 aircraft maintenance record system or M.A.306 operator's technical log system as applicable.

COMPONENTS – SUBPART-E

INSTALLATION (MA 501)

a. No component may be fitted unless it is in a satisfactory condition, has been appropriately released to service on an EASA Form 1(see annex 1) or equivalent and is marked in accordance with Part 21 Subpart-Q, unless otherwise specified in Annex (Part-21) to Regulation (EC) No 1702/2003, Annex II (Part-145) or Subpart-F, Section A of Annex I to this Regulation.
b. Prior to installation of a component on an aircraft the person or approved maintenance organization shall ensure that the particular component is eligible to be fitted when different modification and/or airworthiness directive configurations may be applicable.
c. Standard parts shall only be fitted to an aircraft or a component when the maintenance data specifies the particular standard part. Standard parts shall only be fitted when accompanied by evidence of conformity traceable to the applicable standard.
d. Material being either raw material or consumable material shall only be used on an aircraft or a component when the aircraft or component manufacturer states so in relevant maintenance data or as specified in Part-145. Such material shall only be used when the material meets the required specification and has appropriate traceability. All material must be accompanied by documentation clearly relating to the particular material and containing a conformity to specification statement plus both the manufacturing and supplier source.

COMPONENTS MAINTENANCE (MA 502)

a. The maintenance of components shall be performed by maintenance organizations appropriately approved in accordance with Section A, Subpart-F of this Annex (Part-M) or with Annex II (Part- 145).
b. By derogation from paragraph (a), maintenance of a component in accordance with aircraft maintenance data or, if agreed by the competent authority, in accordance with component maintenance data, may be performed by an A rated organization approved in accordance with Section A, Subpart-F of this Annex (Part-M) or with Annex II (Part-145) as well as by certifying staff referred to in point M.A.801 (b) 2 only whilst such components are fitted to the aircraft. Nevertheless, such organization or certifying staff may temporarily remove this component for maintenance, in order to improve access to the component, except when such removal generates the need for additional maintenance not eligible for the provisions of this paragraph. Component maintenance performed in accordance with this paragraph is not eligible for the issuance of an EASA Form 1 and shall be subject to the aircraft release requirements provided for in point M.A.801.
c. By derogation from paragraph (a), maintenance of an engine/Auxiliary Power Unit (APU) component in accordance with engine/APU maintenance data or, if agreed by the competent authority, in accordance with component maintenance data, may be performed by a B rated organization approved in accordance with Section A, Subpart-F of this Annex (Part-M) or with Annex II (Part-145) only whilst such components are fitted to the engine/APU. Nevertheless, such B rated organization may temporarily remove this component for maintenance, in order to improve access to the component, except when such removal generates the need for additional maintenance not eligible for the provisions of this paragraph.

d. By derogation from paragraph (a) and point M.A.801(b)2, maintenance of a component while installed or temporarily removed from an ELA1 aircraft not used in commercial air transport and performed in accordance with component maintenance data, may be performed by certifying staff referred to in point M.A.801(b)2, except for:
   1. Overhaul of components other than engines and propellers, and;
   2. Overhaul of engines and propellers for aircraft other than CS-VLA, CS-22 and LSA.

Component maintenance performed in accordance with paragraph (d) is not eligible for the issuance of an EASA Form 1 (annex 1) and shall be subject to the aircraft release requirements provided for in point M.A.801.

CAUTION

Installed service life limited components shall not exceed the approved service life limit as specified in the approved maintenance program and airworthiness directives, except as provided for in point M.A.504(c).

The approved service life is expressed in calendar time, flight hours, landings or cycles, as appropriate.

At the end the approved service life, the component must be removed from the aircraft for maintenance, or for disposal in the case of components with a certified life limit.

CONTROL OF UNSERVICEABLE COMPONENTS (MA 504)

a. A component shall be considered unserviceable in any one of the following circumstances:
   1. Expiry of the service life limit as defined in the maintenance program;
   2. Non-compliance with the applicable airworthiness directives and other continued airworthiness requirement mandated by the Agency;
   3. Absence of the necessary information to determine the airworthiness status or eligibility for installation;
   4. Evidence of defects or malfunctions;
   5. Involvement in an incident or accident likely to affect its serviceability.

b. Unserviceable components shall be identified and stored in a secure location under the control of an approved maintenance organization until a decision is made on the future status of such component. Nevertheless, for aircraft not used in commercial air transport other than large aircraft, the person or organization that declared the component unserviceable may transfer its custody, after identifying it as unserviceable, to the aircraft owner provided that such transfer is reflected in the aircraft logbook or engine logbook or component logbook.
c. Components which have reached their certified life limit or contain a non-repairable defect shall be classified as unsalvageable and shall not be permitted to re-enter the component supply system, unless certified life limits have been extended or a repair solution has been approved according to M.A.304.
d. Any person or organization accountable under Part-M shall, in the case of a paragraph (c) unsalvageable components:
   1. Retain such component in the paragraph (b) location, or;
   2. Arrange for the component to be mutilated in a manner that ensures that it is beyond economic salvage or repair before relinquishing responsibility for such component.
e. Notwithstanding paragraph (d) a person or organization accountable under Part-M may transfer responsibility of components classified as unsalvageable to an organization for training or research without mutilation.

MAINTENANCE ORGANIZATION – SUBPART-F

This Subpart establishes the requirements to be met by an organization to qualify for the issue or continuation of an approval for the maintenance of aircraft and components not listed in M.A.201 (g).

An application for issue or variation of a maintenance organization approval shall be made on a form and in a manner established by the competent authority.

CONTINUING AIRWORTHINESS MANAGEMENT ORGANIZATION - SUBPART-G

This Subpart establishes the requirements to be met by an organization to qualify for the issue or continuation of an approval for the management of aircraft continuing airworthiness.

CERTIFICATE OF RELEASE TO SERVICE (CRS) – SUBPART-H

AIRCRAFT CERTIFICATE OF RELEASE TO SERVICE (MA 801)

a. Except for aircraft released to service by a maintenance organization approved in accordance with Annex II (Part-145), the certificate of release to service shall be issued according to this Subpart; (***Figure 6-1***)

b. No aircraft can be released to service unless a certificate of release to service is issued at the completion of any maintenance, when satisfied that all maintenance required has been properly carried out, by:
   1. Appropriate certifying staff on behalf of the maintenance organization approved in accordance with Section A, Subpart-F of this Annex (Part-M); or
   2. Certifying staff in compliance with the requirements laid down in Annex III (Part-66), except for complex maintenance tasks listed in Appendix VII to this Annex for which point 1 applies; or
   3. By the Pilot-owner in compliance with point M.A.803;

c. By derogation from point M.A.801(b)2 for ELA1 aircraft not used in commercial air transport, aircraft complex maintenance tasks listed in Appendix VII may be released by certifying staff referred to in point M.A.801(b)2;

d. By derogation from point M.A.801(b), in the case of unforeseen situations, when an aircraft is grounded at a location where no approved maintenance organization appropriately approved under this Annex or Annex II (Part-145) and no appropriate certifying staff are available, the owner may authorize any person, with not less than three years of appropriate maintenance experience and holding the proper qualifications, to maintain according to the standards set out in Subpart-D of this Annex and release the aircraft. The owner shall in that case:
   1. Obtain and keep in the aircraft records details of all the work carried out and of the qualifications held by that person issuing the certification; and
   2. Ensure that any such maintenance is rechecked and released by an appropriately authorized person referred to in point M.A.801(b) or an organization approved in accordance with Section A, Subpart-F of this Annex (Part-M), or with Annex II (Part-145) at the earliest opportunity but within a period not exceeding seven days; and

1. Approving Component Authority / Country **Transportstyrelsen / Sweden**	2. **AUTHORISED RELEASE CERTIFICATE EASA FORM 1**				3. Form Tracking Number
4. Organisation Name and Address:					5. Work Order / Contract / Invoice
6. Item	7. Description	8. Part No	9. Qty	10. Serial No	11. Status / Work
12. Remarks					
13 a. Certifies that the items identified above were manufactured in conformity to: ☐ approved design data and are in a condition for safe operation ☐ non-approved design data specified in block 12			14 a. ☐ Part-145.A.50 Release to Service ☐ Other regulation specified in block 12 Certifies that unless otherwise specified in block 12, the work identified in block 11 and described in block 12, was acomplished in accordance with Part-145 and in respect to that work the items are considered ready for release to service.		
13 b. Authorised Signature	13 c. Approval / Authorisation Number		14 b. Authorised Signature		14 c. Certificate / Approval Ref. No.
13 d. Namn	13 e. Date (dd mmm yyyy)		14 d. Name		14 e. Date (dd mmm yyyy)
USER / INSTALLER RESPONSIBILITIES This certificate does not automatically constitute authority to install the item(s). Where the user / installer performs work in accordance with regulations of an airworthiness authority different than the airworthiness authority specified in block 1, it is essential that the user / installer ensures that his / her airworthiness authority accepts items from the airworthiness authority specified in block 1. Statements in block 13 a and 14 a do not constitute installation certification. In all cases aircraft maintenance records must contain an istallation certification issued in accordance with the national regulations by the user / installer before the aircraft may be flown.					
EASA Form 1 MF/145 Issue 2					

Figure 6-1. Authorized release certificate also known as a certificate of release to service or CRS.

3. Notify the organization responsible for the continuing airworthiness management of the aircraft when contracted in accordance with point M.A.201(e), or the competent authority in the absence of such a contract, within seven days of the issuance of such certification authorization;

e. In the case of a release to service in accordance with point M.A.801(b)2 or point M.A.801(c), the certifying staff may be assisted in the execution of the maintenance tasks by one or more persons subject to his/her direct and continuous control;

f. A certificate of release to service shall contain as a minimum:
   1. Basic details of the maintenance carried out; and
   2. The date such maintenance was completed; and
   3. The identity of the organization and/or person issuing the release to service, including:
      i. The approval reference of the maintenance organization approved in accordance with Section A, Subpart-F of this Annex (Part-M) and the certifying staff issuing such a certificate; or
      ii. In the case of point M.A.801(b)2 or M.A.801(c) certificate of release to service, the identity and if applicable license number of the certifying staff issuing such a certificate;
   4. The limitations to airworthiness or operations, if any.

g. By derogation from paragraph (b) and notwithstanding the provisions of paragraph (h), when the maintenance prescribed cannot be completed, a certificate of release to service may be issued within the approved aircraft limitations. Such fact together with any applicable limitations of the airworthiness or the operations shall be entered in the aircraft certificate of release to service before its issue as part of the information required in paragraph (f) 4;

h. A certificate of release to service shall not be issued in the case of any known non-compliance which endangers flight safety.

COMPONENT CERTIFICATE OF RELEASE TO SERVICE (MA 802)

a. A certificate of release to service shall be issued at the completion of any maintenance on an aircraft component whilst off the aircraft.

b. The authorized release certificate identified as EASA Form 1 for the Member States constitutes the aircraft component certificate of release to service.

PILOT-OWNER AUTHORIZATION (MA 803)

a. The pilot-owner is the person who owns or jointly owns the aircraft being maintained and holds a valid pilot license with the appropriate type or class rating.

b. For any privately operated aircraft of simple design with a maximum take-off mass of less than 2730 kg, glider and balloon, the pilot-owner may issue the certificate of release to service after limited pilot owner maintenance listed in Appendix VIII.

c. Limited pilot owner maintenance shall be defined in the MA302 aircraft maintenance program.

d. The certificate of release to service must be entered in the logbooks and contain basic details of the maintenance carried out, the date such maintenance was completed and the indentity and pilot license number of the pilot-owner issuing such a certificate.

AIRWORTHINESS REVIEW CERTIFICATE – SUBPART-I

AIRCRAFT AIRWORTHINESS REVIEW (MA 901)

To ensure the validity of the aircraft airworthiness certificate, an airworthiness review of the aircraft and its continuing airworthiness records shall be carried out periodically.

a. An airworthiness review certificate is issued in accordance with Appendix III (EASA Form 15a or 15b) on completion of a satisfactory airworthiness review. The airworthiness review certificate is valid one year; (***Figure 6-2***)

b. An aircraft in a controlled environment is an aircraft:
   i. Continuously managed during the previous 12 months by a unique continuing airworthiness management organization approved in accordance with Section A, Subpart-G, of this Annex (Part-M), and
   ii. Which has been maintained for the previous 12 months by maintenance organizations approved in accordance with Section A, Subpart-F of this Annex (Part-M), or with Annex II (Part 145). This includes maintenance tasks referred to in point M.A.803 (b) carried out and released to service in accordance with point M.A.801 (b)2 or point M.A.801(b)3;

c. For all aircraft used in commercial air transport, and aircraft above 2 730 kg MTOM, except balloons, that are in a controlled environment, the organization referred to in (b) managing the continuing airworthiness of the aircraft may, if appropriately approved, and subject to compliance with paragraph (k):
   1. Issue an airworthiness review certificate in accordance with point M.A.710, and;
   2. For the airworthiness review certificates it has issued, when the aircraft has remained within a controlled environment, extend twice the validity of the airworthiness review certificate for a period of one year each time;

d. For all aircraft used in commercial air transport and aircraft above 2 730 kg MTOM, except balloons, that (i) are not in a controlled environment, or (ii) which continuing airworthiness is managed by a continuing airworthiness management organization that does not hold the privilege to carry out airworthiness reviews, the airworthiness review certificate shall be issued by the competent authority upon satisfactory assessment based on a recommendation made by a continuing airworthiness management organization appropriately approved in accordance with Section A, Subpart-G of this Annex (Part-M) sent together with the application from the owner or operator. This recommendation shall be based on an airworthiness review carried out in accordance with point M.A.710;

e. For aircraft not used in commercial air transport of 2 730 kg MTOM and below, and balloons, any continuing airworthiness management organization approved in accordance with Section A, Subpart-G of this Annex (Part-M) and appointed by the owner or operator may, if appropriately approved and subject to paragraph (k):
   1. Issue the airworthiness review certificate in accordance with point M.A.710, and;
   2. For airworthiness review certificates it has issued, when the aircraft has remained within a controlled environment under its management, extend twice the validity of the airworthiness review certificate for a period of one year each time;

f. By derogation from points M.A.901(c)2 and M.A.901(e)2, for aircraft that are in a controlled environment, the organization referred to in (b) managing the continuing airworthiness of the aircraft, subject to compliance with paragraph (k), may extend twice for a period of one year each time the validity of an airworthiness review certificate that has been issued by the competent authority or by another continuing airworthiness management organization approved in accordance with Section A, Subpart-G of this Annex (Part-M);

[MEMBER STATE]

A Member of the European Union (*)

AIRWORTHINESS REVIEW CERTIFICATE

ARC reference: .....

Pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council for the time being into force, the following continuing airworthiness management organisation, approved in accordance with Section A, Subpart G of Annex I (Part M) to Commission Regulation (EC) No 2042/2003

[NAME OF ORGANISATION APPROVED AND ADDRESS]
Approval reference: NL.MG[NNNN]

has performed an airworthiness review in accordance with point M.A.710 of Annex I to Commission Regulation (EC) No 2042/2003 on the following aircraft :

Aircraft manufacturer : .....
Manufacturer's designation : .....
Aircraft registration : .....
Aircraft serial number : .....

and this aircraft is considered airworthy at the time of the review.

Date of issue : ..... Date of expiry : .....
Signed : ..... Authorisation No : .....

1st Extension: The aircraft has remained in a controlled environment in accordance with point M.A.901 of Annex I to Commission Regulation (EC) No 2042/2003 for the last year. The aircraft is considered to be airworthy at the time of the issue.

Date of issue : ..... Date of expiry : .....
Signed : ..... Authorisation No : .....
Company Name : ..... Approval reference : .....

2nd Extension: The aircraft has remained in a controlled environment in accordance with point M.A.901 of Annex I to Commission Regulation (EC) No 2042/2003 for the last year. The aircraft is considered to be airworthy at the time of the issue.

Date of issue : ..... Date of expiry : .....
Signed : ..... Authorisation No : .....
Company Name : ..... Approval reference : .....

Figure 6-2. An airworthiness review certificate.

g. By derogation from points M.A.901(e) and M.A.901(i)2, for ELA1 aircraft not used in commercial air transport and not affected by point M.A.201(i), the airworthiness review certificate may also be issued by the competent authority upon satisfactory assessment, based on a recommendation made by certifying staff formally approved by the competent authority and complying with provisions of Annex III (Part-66) as well as requirements laid down in point M.A.707(a)2(a), sent together with the application from the owner or operator. This recommendation shall be based on an airworthiness review carried out in accordance with point M.A.710 and shall not be issued for more than two consecutive years;

h. Whenever circumstances reveal the existence of a potential safety threat, the competent authority shall carry out the airworthiness review and issue the airworthiness review certificate itself;

i. In addition to paragraph (h), the competent authority may also carry out the airworthiness review and issue the airworthiness review certificate itself in the following cases:

j. For aircraft not involved in commercial air transport when the aircraft is managed by a continuing airworthiness management organization approved in accordance with Section A, Subpart-G of this Annex (Part-M) located in a third country;
   1. For all balloons and any other aircraft of 2 730 kg MTOM and below, if it is requested by the owner;

k. When the competent authority carries out the airworthiness review and/or issues the airworthiness review certificate itself, the owner or operator shall provide the competent authority with:
   1. The documentation required by the competent authority; and
   2. Suitable accommodation at the appropriate location for its personnel; and
   3. When necessary, the support of personnel appropriately qualified in accordance with Annex III (Part-66) or equivalent personnel requirements laid down in point 145.A.30(j) (1) and (2) of Annex II (Part 145);

l. An airworthiness review certificate cannot be issued nor extended if there is evidence or reason to believe that the aircraft is not airworthy.

VALIDITY OF THE AIRWORTHINESS REVIEW CERTIFICATE (MA 902)

a. An airworthiness review certificate becomes invalid if:
   1. Suspended or revoked; or
   2. The airworthiness certificate is suspended or revoked; or
   3. The aircraft is not on the aircraft register of a Member State; or
   4. The type certificate under which the airworthiness certificate was issued is suspended or revoked.

b. An aircraft must not fly if the airworthiness certificate is invalid or if:
   1. The continuing airworthiness of the aircraft or any component fitted to the aircraft does not meet the requirements of this Part, or;
   2. The aircraft does not remain in conformity with the type design approved by the Agency; or
   3. The aircraft has been operated beyond the limitations of the approved flight manual or the airworthiness certificate, without appropriate action being taken; or
   4. The aircraft has been involved in an accident or incident that affects the airworthiness of the aircraft, without subsequent appropriate action to restore airworthiness; or
   5. A modification or repair has not been approved in accordance with Part-21.

c. Upon surrender or revocation, the airworthiness review certificate shall be returned to the competent authority.

FINDINGS (MA 905)

a. A level 1 finding is any significant non-compliance with Part-M requirements which lowers the safety standard and hazards seriously the flight safety.

b. A level 2 finding is any non-compliance with the Part-M requirements which could lower the safety standard and possibly hazard the flight safety.

c. After receipt of notification of findings according to M.B.303, the person or organization accountable according to M.A.201 shall define a corrective action plan and demonstrate corrective action to the satisfaction of the competent authority within a period agreed with this authority including appropriate corrective action to prevent reoccurrence of the finding and its root cause.

PROCEDURE FOR COMPETENT AUTHORITIES - SECTION-B

This Section establishes the administrative requirements to be followed by the competent authorities in charge of the application and the enforcement of Section A of this Part.

COMPETENT AUTHORITY (MB 102)

a. **General**: A Member State shall designate a competent authority with allocated responsibilities for the issuance, continuation, change, suspension or revocation of certificates and for the oversight of continuing airworthiness. This competent authority shall establish documented procedures and an organizational structure.

b. **Resources**: The number of staff shall be appropriate to carry out the requirements as detailed in this Section B.

c. **Qualification and Training**: All staff involved in Part-M activities shall be appropriately qualified and have appropriate knowledge, experience, initial training and continuation training to perform their allocated tasks.

d. **Procedures**: The competent authority shall establish procedures detailing how compliance with this Part is accomplished. The procedures shall be reviewed and amended to ensure continued compliance.

RECORD-KEEPING (MB 104)

a. The competent authorities shall establish a system of record-keeping that allows adequate traceability of the process to issue, continue, change, suspend or revoke each certificate.
b. The records for the oversight of Part-M approved organizations shall include as a minimum:
   1. The application for an organization approval.
   2. The organization approval certificate including any changes.
   3. A copy of the audit program listing the dates when audits are due and when audits were carried out.
   4. The competent authority continued oversight records including all audit records.
   5. Copies of all relevant correspondence.
   6. Details of any exemption and enforcement actions.
   7. Any report from other competent authorities relating to the oversight of the organization.
   8. Organization exposition or manual and amendments.
   9. Copy of any other document directly approved by the competent authority.
c. The retention period for the paragraph (b) records shall be at least four years.
d. The minimum records for the oversight of each aircraft shall include, at least, a copy of:
   1. Aircraft certificate of airworthiness.
   2. Airworthiness review certificates.
   3. Section A Subpart-G organization recommendations.
   4. Reports from the airworthiness reviews carried out directly by the Member State.
   5. All relevant correspondence relating to the aircraft.
   6. Details of any exemption and enforcement action(s).
   7. Any document directly approved by the competent authority as referred to in M.B. Subpart-B.
e. The records specified in paragraph (d) shall be retained until two years after the aircraft has been permanently withdrawn from service.
f. All records specified in M.B.104 shall be made available upon request by another Member State or the Agency.

PART-T

ACCEPTABLE MEANS OF COMPLIANCE AND GUIDANCE MATERIAL TO ANNEX VA (PART-T) TO COMMISSION REGULATION (EU) NO 1321/2014

Part T (issued November 7, 2016), is part of the Continuing Airworthiness group of parts but is in fact most closely related to the operator (Part M) and CAMO. It is applicable to aircraft registered in a third country (non EU country) and whose oversight has not been delegated to a Member State.

Part T concerns the airworthiness management of aircraft which are leased for a short term (less than 7 months). In particular it accepts that for a short term lease the aircraft may not be "fully compliant" with all EASA requirements, so instead focusing on the need to demonstrate compliance with ICAO requirements.

In accordance with the requirements of ORO. AOC.110(a) any lease agreement concerning aircraft used by an operator certified in accordance with this Part shall be subject to prior approval by the competent authority.

PART-T SCOPE AND RESPONSIBILITIES

ANNEX VA (PART-T)

T.1 Competent Authority (Regulation 2015/1536)

For the purpose of this Part, the competent authority for the oversight of the aircraft and the organizations shall be the authority designated by the Member State that has issued the Air Operator Certificate to the operator.

T.A.101 Scope

This section establishes requirements to ensure that continuing airworthiness of aircraft referred to in Article 1(b) is maintained in compliance with the essential requirements of Annex IV to Regulation (EC) No 216/2008. It also specifies the conditions to be met by the persons and organizations responsible for management of the continuing airworthiness and maintenance of such aircraft.

T.A.201 RESPONSIBILITIES

SECTION 1

a. The operator is responsible for the airworthiness of the aircraft and it shall ensure that it is not operated unless the aircraft has a type certificate issued or validated by the Agency;
b. the aircraft is in an airworthy condition;
c. the aircraft holds a valid certificate of airworthiness issued in accordance with ICAO Annex 8;
d. the maintenance of the aircraft is performed in accordance with a maintenance program which shall comply with the requirements of the State of Registry and the applicable requirements of ICAO Annex 6.
e. any defect or damage affecting the safe operation of the aircraft is rectified to a standard acceptable to the State of Registry;
f. the aircraft complies with any applicable:
    i. (i) airworthiness directive or continued airworthiness requirement issued or adopted by the State of Registry; and
    ii. (ii) mandatory safety information issued by the Agency, including airworthiness directives;
g. a release to service is issued to the aircraft after maintenance by qualified organizations in compliance with the State of Registry requirements. The signed release to service shall contain, in particular, the basic details of the maintenance carried out.
h. the aircraft is inspected, through a pre-flight inspection, before each flight
i. all modifications and repairs comply with the airworthiness requirements established by the State of Registry
j. the following aircraft records are available until the information contained has been superseded by new information equivalent in scope and detail but not less than 24 months:
    1. the total time in service (hours, cycles and calendar time, as appropriate) of the aircraft and all life-limited components;
    2. current status of compliance with T.A.201(1)(f) requirements;
    3. current status of compliance with the maintenance program;
    4. current status of modifications and repairs together with appropriate details and substantiating data to demonstrate that they comply with the requirements established by the State of Registry.

SECTION 2

The tasks specified in T.A.201(1) shall be controlled by the operator's continuing airworthiness management organization. For this purpose the organization shall comply with the additional requirements of T.A. Subpart G.

SECTION 3

The continuing airworthiness management organization referred to in (2) shall ensure that the maintenance and release of the aircraft are performed by a maintenance organization meeting the requirements of Subpart E. For this purpose, when the continuing airworthiness management organization does not meet the requirements of subpart E itself, it shall establish a contract with such organizations.

Question: 6-1
The holder of a type certificate shall have a system for collecting, investigating and analyzing reports of and information related to failures, malfunctions, defects or other occurrences which cause or might cause adverse effects on _____.

Question: 6-2
Any person or organization performing maintenance shall be _____ for the tasks performed.

Question: 6-3
An aircraft maintenance program must establish compliance with instructions issued by the competent authority and _____ issued by the holders of the type certificate.

Question: 6-4
An operator shall ensure that the aircraft technical log is _____ retained for months after the date of the last entry.

Question: 6-5
_____ components shall be identified and stored in a secure location under the control of an approved maintenance organization until a decision is made on the future status of such component.

Question: 6-6
An airworthy review certificate is valid for _____ year.

Question: 6-7
The competent authorities shall establish a system _____ of that allows adequate traceability of the process to issue, continue, change, suspend or revoke each certificate.

ANSWERS

Answer: 6-1
continuing airworthiness.

Answer: 6-2
responsible.

Answer: 6-3
instructions for continuing airworthiness.

Answer: 6-4
36.

Answer: 6-5
Unserviceable.

Answer: 6-6
one.

Answer: 6-7
record-keeping

AVIATION LEGISLATION

APPLICABLE NATIONAL AND INTERNATIONAL REQUIREMENTS

SUB-MODULE 07

PART-66 SYLLABUS **LEVELS**

CERTIFICATION CATEGORY →	B1	B2

Sub-Module 07

APPLICABLE NATIONAL AND INTERNATIONAL REQUIREMENTS

Knowledge Requirements

10.7 - Applicable National and International Requirements		
(a) Maintenance Programmes, Maintenance checks and inspections; Airworthiness Directives; Service Bulletins, manufacturers service information; Modifications and repairs; Maintenance documentation: maintenance manuals, structural repair manual, illustrated parts catalogue, etc.; Only for A to B2 licences: Master Minimum Equipment Lists, Minimum Equipment List, Dispatch Deviation Lists;	2	2
(b) Continuing airworthiness; Minimum equipment requirements - Test flights; Only for B1 and B2 licences: ETOPS, maintenance and dispatch requirements; All Weather Operations, Category 2/3 operations.	1	1

NATIONAL/INTERNATIONAL REQUIREMENTS

Level 1
A familiarization with the principal elements of the subject.

Objectives:
(a) The applicant should be familiar with the basic elements of the subject.
(b) The applicant should be able to give a simple description of the whole subject, using common words and examples.
(c) The applicant should be able to use typical terms.

Level 2
A general knowledge of the theoretical and practical aspects of the subject and an ability to apply that knowledge.

Objectives:
(a) The applicant should be able to understand the theoretical fundamentals of the subject.
(b) The applicant should be able to give a general description of the subject using, as appropriate, typical examples.
(c) The applicant should be able to use mathematical formula in conjunction with physical laws describing the subject.
(d) The applicant should be able to read and understand sketches, drawings and schematics describing the subject.
(e) The applicant should be able to apply his knowledge in a practical manner using detailed procedures.

INTRODUCTION

In some areas the rules published by national civil aviation authorities can replace or supplement the international rules published by ICAO. In this case, the document should be supplemented with the rules of the civil aviation authority of the country concerned. Only the ICAO corresponding rules, if not superseded by EU requirements, shall be treated in this document. If a detailed description of an EASA rule is contained in existing documents, only reference to these documents is made.

MAINTENANCE CHECKS AND INSPECTIONS

GENERAL

Aircraft maintenance checks are periodic inspections that have to be done on all commercial/civil aircraft after a certain amount of time or usage. Commercial operators of large or turbine-powered aircraft follow a continuous inspection program approved by the airworthiness authorities. Each operator prepares a Continuous Airworthiness Maintenance Program (CAMP) under its Operations Specifications. The CAMP includes both routine and detailed inspections. Airlines and airworthiness authorities casually refer to the detailed inspections as "checks", commonly one of the following: A check, B check, C check, or D check. A and B checks are lighter checks, while C and D are considered heavier checks.

"A" CHECK

This is performed approximately every 500-800 flight hours or 200-400 cycles. It needs about 20-50 man-hours and is usually performed overnight at an airport gate or hangar. The actual occurrence of this check varies by aircraft type, the cycle count (takeoff and landing is considered an aircraft "cycle"), or the number of hours flown since the last check. The occurrence can be delayed by the airline if certain predetermined conditions are met.

"B" CHECK

This is performed approximately every 4-6 months. It needs about 150 man-hours and is usually performed within 1 - 3 days at an airport hangar. A similar occurrence schedule applies to the B check as to the A check. B checks may be incorporated into successive A checks, i.e.: A-1 through A-10 complete all the B check items.

"C" CHECK

This is performed approximately every 20-24 months or a specific amount of actual flight hours (FH) as defined by the manufacturer. This maintenance check is much more extensive than a B Check, requiring a large majority of the aircraft's components to be inspected. This check puts the aircraft out of service and until it is completed, the aircraft must not leave the maintenance site. It also requires more space than A and B Checks—usually a hangar at a maintenance base. The time needed to complete such a check is generally 1-2 weeks and the effort involved can require up to 6 000 man-hours. The schedule of occurrence has many factors and components as has been described, and thus varies by aircraft category and type. (***Figure 7-1***)

Figure 7-1. "C" Check inspection.

"D" CHECK

This is by far the most comprehensive and demanding check for an airplane. It is also known as a Heavy Maintenance Visit (HMV). This check occurs approximately every 5 years. It is a check that, more or less, takes the entire airplane apart for inspection and overhaul. Also, if required, the paint may need to be completely removed for further inspection on the fuselage metal skin. Such a check can usually demand up to 50 000 man-hours and it can generally take up to 2 months to complete, depending on the aircraft and the number of technicians involved. It also requires the most space of all maintenance checks, and as such must be performed at a suitable maintenance base. Given the elevated requirements of this check and the

tremendous effort involved in it, it is also by far the most expensive maintenance check of all, with total costs for a single visit ending up well within the million-dollar range.

Because of the nature and the cost of such a check, most airlines (especially those with a large fleet) have to plan D Checks for their aircraft years in advance. Often, older aircraft being phased out of a particular airline's fleet are either stored or scrapped upon reaching their next D Check, due to the high costs involved in it in comparison to the aircraft's value. On average, a commercial aircraft undergoes 2-3 D Checks before it is retired. (***Figure 7-2***)

Figure 7-2. "D" Check inspection.

AIRWORTHINESS DIRECTIVES

An airworthiness directive (commonly abbreviated as AD) is a notification to owners and operators of certified aircraft that a known safety deficiency with a particular model of aircraft, engine, avionics or other system exists and must be corrected. If a certified aircraft has outstanding airworthiness directives that have not been complied with, the aircraft is not considered airworthy. Thus, it is mandatory for an aircraft operator to comply with an AD. ***Figure 7-3*** illustrates an EASA Airworthiness Directive.

EASA AD No.: 2014-0266-E

EASA	EMERGENCY AIRWORTHINESS DIRECTIVE
	AD No.: 2014-0266-E **Date: 09 December 2014** Note: This Emergency Airworthiness Directive (AD) is issued by EASA, acting in accordance with Regulation (EC) No 216/2008 on behalf of the European Community, its Member States and of the European third countries that participate in the activities of EASA under Article 66 of that Regulation.

This AD is issued in accordance with EU 748/2012, Part 21.A.3B. In accordance with EC 2042/2003 Annex I, Part M.A.301, the continuing airworthiness of an aircraft shall be ensured by accomplishing any applicable ADs. Consequently, no person may operate an aircraft to which an AD applies, except in accordance with the requirements of that AD, unless otherwise specified by the Agency [EC 2042/2003 Annex I, Part M.A.303] or agreed with the Authority of the State of Registry [EC 216/2008, Article 14(4) exemption].

Design Approval Holder's Name:	Type/Model designation(s):
AIRBUS	A318, A319, A320 and A321 aeroplanes

TCDS Number:	EASA.A.064
Foreign AD:	Not applicable
Supersedure:	None

ATA	Airplane Flight Manual – Undue Activation of Alpha Protection – Emergency Procedure
Manufacturer(s):	Airbus (formerly Airbus Industrie)
Applicability:	Airbus A318-111, A318-112, A318-121, A318-122, A319-111, A319-112, A319-113, A319-114, A319-115, A319-131, A319-132, A319-133, A320-211, A320-212, A320-214, A320-215, A320-216, A320-231, A320-232, A320-233, A321-111, A321-112, A321-131, A321-211, A321-212, A321-213, A321-231 and A321-232 aeroplanes, all manufacturer serial numbers
Reason:	An occurrence was reported where an Airbus A321 aeroplane encountered a blockage of two Angle Of Attack (AOA) probes during climb, leading to activation of the Alpha Protection (Alpha Prot) while the Mach number increased. The flight crew managed to regain full control and the flight landed uneventfully. When Alpha Prot is activated due to blocked AOA probes, the flight control laws order a continuous nose down pitch rate that, in a worst case scenario, cannot be stopped with backward sidestick inputs, even in the full backward position. If the Mach number increases during a nose down order, the AOA value of the Alpha Prot will continue to decrease. As a result, the flight control laws will continue to order a nose down pitch rate, even if the speed is above minimum selectable speed, known as VLS. This condition, if not corrected, could result in loss of control of the aeroplane. To address this unsafe condition, Airbus have developed a specific Aircraft Flight Manual (AFM) procedure, which has been published in AFM Temporary Revision (TR) N° 502. For the reasons described above, this AD requires amendment of the applicable AFM.

EASA AD No.: 2014-0266-E

	This is considered to be an interim action and further AD action may follow.
Effective Date:	11 December 2014
Required Action(s) and Compliance Time(s):	Required as indicated, unless accomplished previously: (1) Before next flight after the effective date of this AD, amend the applicable AFM by inserting a copy of Airbus AFM A320 TR 502 "Abnormal V alpha Prot", issue 1. Alternatively, amending the applicable AFM can be accomplished by inserting of a copy of Appendix 1 of this AD into the Section Emergency Procedures. (2) Concurrent with the AFM amendment as required by paragraph (1) of this AD, inform all flight crews and, thereafter, operate the aeroplane accordingly.
Ref. Publications:	Airbus AFM A320 TR 502 issue 1, EASA approved 05 December 2014. The use of later approved revisions of this document is acceptable for compliance with the requirements of this AD.
Remarks:	1. If requested and appropriately substantiated, EASA can approve Alternative Methods of Compliance for this AD. 2. The results of the safety assessment have indicated the need for immediate publication and notification, without the full public consultation process. 3. Enquiries regarding this AD should be referred to the Safety Information Section, Certification Directorate, EASA. E-mail: ADs@easa.europa.eu. 4. For any question concerning the technical content of the requirements in this AD, please contact: AIRBUS – Airworthiness Office – EIAS; Fax +33 5 61 93 44 51; E-mail: account.airworth-eas@airbus.com.

Figure 7-3. EASA airworthiness directive (AD) example.

PURPOSE

ADs usually result from service difficulty reporting by operators or from the results of aircraft accident investigations. They are issued either by the national civil aviation authority of the country of aircraft manufacture or of aircraft registration. When ADs are issued by the country of registration they are almost always coordinated with the civil aviation authority of the country of manufacture to ensure that conflicting ADs are not issued. In detail, the purpose of an AD is to notify aircraft owners:

- That the aircraft may have an unsafe condition, or
- That the aircraft may not be in conformity with its basis of certification or of other conditions that affect the aircraft's airworthiness, or
- That there are mandatory actions that must be carried out to ensure continued safe operation, or
- That, in some urgent cases, the aircraft must not be flown until a corrective action plan is designed and carried out.

ADs are mandatory in most jurisdictions and often contain dates or aircraft flying hours by which compliance must be completed. ADs may be divided into two categories:

- Those of an emergency nature requiring immediate compliance prior to further flight, and
- Those of a less urgent nature requiring compliance within a specified period of time.

ISSUANCE

ADs are issued by most civil aviation regulatory authorities:

- European Aviation Safety Agency
- Directorate General of Civil Aviation (India)
- Federal Aviation Administration (USA)
- Transport Canada
- Civil Aviation Safety Authority (Australia)

SERVICE BULLETINS

ATA SPEC 2200

With increasing in-service experience, the type certificate holder may find ways to improve the original design resulting in either lower maintenance costs or increased performance. These improvements (normally involving some alterations) are suggested through service bulletins to their customers as optional (and may be extra cost) items. The customers may exercise their discretion whether or not to incorporate the bulletins. Sometimes SBs can become mandated by relevant ADs.

SCOPE

Separate Service Bulletins shall be issued to cover each subject and shall describe changes that fall into the following categories:

- Modifications to the aircraft, engine or accessory including embedded software.
- Modifications, which affect performance, improve reliability, increase safety of operation, provide improved economy or facilitate maintenance or operation.
- Substitution of one part with another superseding part only when it is not completely interchangeable both functionally and physically, or when the change is considered to be sufficiently urgent or critical that special scheduling or record of accomplishment will be required.
- Substitution of one embedded software program by another which change equipment function and the part number of the programmed memory device, requiring a record of accomplishment.
- Special inspections/checks required to maintain the aircraft, engine, or accessories in safe operating condition.
- One time inspections/checks to detect a flaw or manufacturing error.
- Special inspections/checks required to be performed until a corrective action can be taken. (e.g., an inspection to detect cracks in a radius until the radius can be ground out.) The modification information may be issued as a revision to the same Service Bulletin that transmits the inspection instructions.
- Special functional checks of an urgent nature required to detect an incipient failure, such as pressure checks, functional checks, etc.
- Reduction of existing life limits or establishment of first time life limits for components.
- Conversions from one engine model to another.
- Changes affecting the interchangeability or intermix of parts.

A Service Bulletin shall be practical from the operator's standpoint, i.e., it shall not require new parts when old parts may be repaired or reworked, but it shall, wherever practicable, include instructions and lists of new parts to allow the operator to select either method. Service Bulletins shall be written for applicability to In-Service units or equipment.

A Service Bulletin once issued shall not be canceled. In case the original intent of the Service Bulletin becomes invalidated, a revision to the original Service Bulletin, or a new Service Bulletin, shall be issued for the purpose of restoring the units already modified to the original or preferred configuration. If a new Service Bulletin is issued that supersedes the original Service Bulletin, then a revision to the invalidated Service Bulletin shall also be issued in order to stop progression of its accomplishment.

Even though there are many other publications and correspondence available to the airframe, engine and component manufacturers, they shall not be used to transmit actions which require a record of accomplishment.

These other publications may be used to provide information such as the following:

- To discuss field problems and to highlight information already or scheduled to be incorporated in existing documentation.
- To notify operators of interchangeable or future spare part numbers of equipment which have no effect on aircraft safety, performance, maintainability and reliability.
- To provide preliminary information of a forthcoming Service Bulletin.
- To notify operators of available or forthcoming vendor modifications.
- To notify operators of changes in material finishes, protective coatings, etc.

Service Bulletins must not be used to cover routine recommended inspections/checks, standard repairs, or revisions to maintenance practices or shop procedures. These shall be covered as revisions to the manufacturer's Aircraft Maintenance Manual, Structural Repair Manual, or Component Maintenance Manual as appropriate.

TYPES OF SERVICE BULLETINS

ALERT SB

Alert Service Bulletins shall be issued on all matters requiring the urgent attention of the operator and shall be limited generally to items affecting safety. Matters of extreme urgency with compliance recommendations shall be transmitted by suitable media, such as telegraph, cable, and facsimile or in some cases, by telephone. These shall be identified as Alert Service Bulletins and shall contain a Service Bulletin Number.

A complete Alert Service Bulletin shall be prepared and distributed promptly to confirm and elaborate upon such messages.

STANDARD SB

Standard Service Bulletins shall be issued where the use of Alert Service Bulletins is not required.

ENGINE CONVERSION SB

Conversion Service Bulletins will be issued to provide operators with information necessary to convert engine models from one designation level to another.

SERVICE BULLETIN CONTENTS

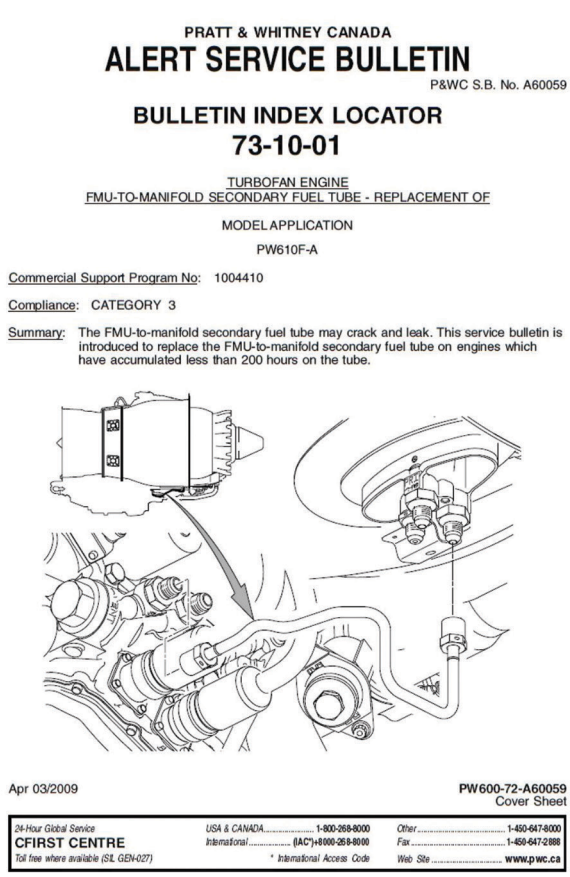
GENERAL

Service Bulletins shall contain a title. It shall contain the chapter name keyword, and a brief statement of the work involved. This information shall be in the sequence stated, such as "Air Conditioning - Out-Flow Valve - Install New Relay in Differential Control.", or for Engine Conversion Service Bulletin "Turbojet Engine Service Bulletin No. 4716, Conversion Model 3250-15 to Model 3250- 17R."

The body of the Service Bulletin may be preceded by a summary. The summary shall contain an overview of the information contained in the Service Bulletin. The body of Service Bulletins shall be prepared in the following sections: Planning Information, Material Information, Accomplishment Instructions and optional Appendices.

PLANNING INFORMATION

This section shall contain the information required to permit the operator to determine if the Service Bulletin should be applied to his equipment and to plan its accomplishment.



PRATT & WHITNEY CANADA

ALERT SERVICE BULLETIN

P&WC S.B. No. A60059

BULLETIN INDEX LOCATOR

73-10-01

TURBOFAN ENGINE
FMU-TO-MANIFOLD SECONDARY FUEL TUBE - REPLACEMENT OF

MODEL APPLICATION

PW610F-A

Commercial Support Program No: 1004410

Compliance: CATEGORY 3

Summary: The FMU-to-manifold secondary fuel tube may crack and leak. This service bulletin is introduced to replace the FMU-to-manifold secondary fuel tube on engines which have accumulated less than 200 hours on the tube.

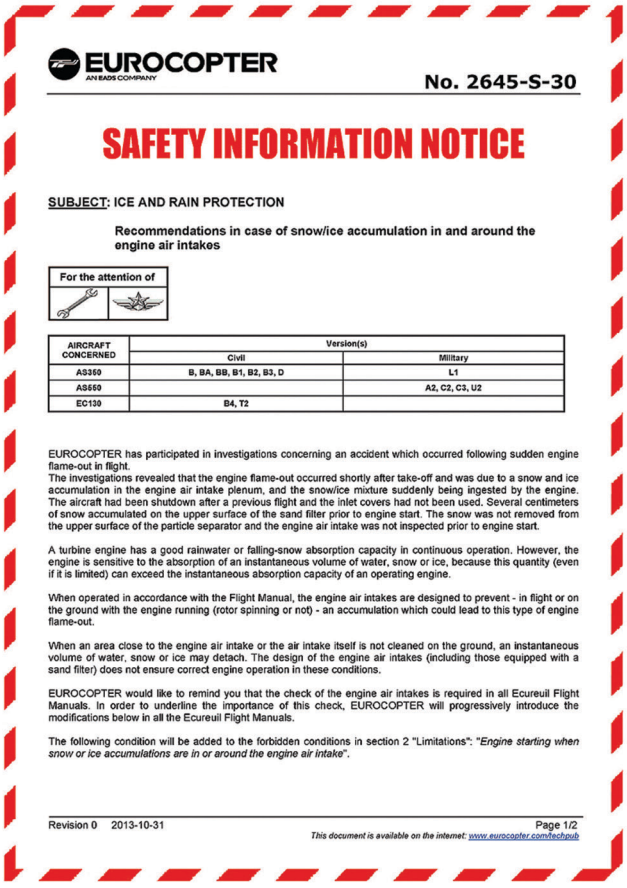
Apr 03/2009

PW600-72-A60059
Cover Sheet

24-Hour Global Service
CFIRST CENTRE
Toll free where available (SIL GEN-027)

USA & CANADA..... 1-800-268-8000
International..... (IAC*)+8000-268-8000
* International Access Code

Other..... 1-450-647-8000
Fax..... 1-450-647-2888
Web Site..... www.pwc.ca



EUROCOPTER
AN EADS COMPANY

No. 2645-S-30

SAFETY INFORMATION NOTICE

SUBJECT: ICE AND RAIN PROTECTION

Recommendations in case of snow/ice accumulation in and around the engine air intakes

For the attention of

AIRCRAFT CONCERNED	Version(s)	
	Civil	Military
AS350	B, BA, BB, B1, B2, B3, D	L1
AS550		A2, C2, C3, U2
EC130	B4, T2	

EUROCOPTER has participated in investigations concerning an accident which occurred following sudden engine flame-out in flight.
The investigations revealed that the engine flame-out occurred shortly after take-off and was due to a snow and ice accumulation in the engine air intake plenum, and the snow/ice mixture suddenly being ingested by the engine. The aircraft had been shutdown after a previous flight and the inlet covers had not been used. Several centimeters of snow accumulated on the upper surface of the sand filter prior to engine start. The snow was not removed from the upper surface of the particle separator and the engine air intake was not inspected prior to engine start.

A turbine engine has a good rainwater or falling-snow absorption capacity in continuous operation. However, the engine is sensitive to the absorption of an instantaneous volume of water, snow or ice, because this quantity (even if it is limited) can exceed the instantaneous absorption capacity of an operating engine.

When operated in accordance with the Flight Manual, the engine air intakes are designed to prevent - in flight or on the ground with the engine running (rotor spinning or not) - an accumulation which could lead to this type of engine flame-out.

When an area close to the engine air intake or the air intake itself is not cleaned on the ground, an instantaneous volume of water, snow or ice may detach. The design of the engine air intakes (including those equipped with a sand filter) does not ensure correct engine operation in these conditions.

EUROCOPTER would like to remind you that the check of the engine air intakes is required in all Ecureuil Flight Manuals. In order to underline the importance of this check, EUROCOPTER will progressively introduce the modifications below in all the Ecureuil Flight Manuals.

The following condition will be added to the forbidden conditions in section 2 "Limitations": *"Engine starting when snow or ice accumulations are in or around the engine air intake"*.

Revision 0 2013-10-31

Page 1/2

This document is available on the internet: www.eurocopter.com/techpub

Figure 7-4. Typical service bulletin.

It includes the following:

- SB Effectivity - specifies the equipment to which the Service Bulletin is applicable. A Service Bulletin Number shall apply to one model or type only.
- Concurrent Requirements, when applicable, state if other Service Bulletins or portions thereof, have to be accomplished in conjunction with, prior to, or subsequent to accomplishment of the subject Service Bulletin.
- Reason - under this heading, sufficient facts shall be provided to assist the operator in determining the Service Bulletin's applicability to, or effect on, his operation.
- Description - provides a brief but complete statement outlining what the Service Bulletin does.
- Compliance Recommendation - This section shall contain the manufacturer's recommendations for accomplishment of the actions specified in the Service Bulletin.

The SB shall include one of these four compliance recommendation categories in the service bulletin:

- Service Bulletin must be accomplished.
- Service Bulletin recommended to be accomplished to prevent significant operational disruptions.
- Service Bulletin to introduce improvements.
- Service Bulletin for convenience or option.

Figure 7-4 shows excerpts from a typical Service Bulletin.

When governmental approval of a change is required, approval shall be obtained prior to release of the Service Bulletin. The planning information section should also include:

- Manpower - Provide an estimate of the man-hours required by the operators to perform the Service Bulletin.
- Weight and Balance - Weight and balance data shall be furnished.
- Electrical Load Data - Provide a statement as to the effect of the Service Bulletin on the aircraft electrical loads.

- Software Accomplishment Summary - If the Service Bulletin involves any change to software, include the Accomplishment Summary information in accordance with RTCA Document DO-178.
- Other Publications Affected - List the chapter/section locations within affected manuals and catalogs, and Service Bulletins which will require revision as a consequence of a Service Bulletin or Service Bulletin revision.
- Interchangeability or Intermixability of Parts
    - When parts are interchangeable, the Service Bulletin shall include a section that identifies the possibility of full substitution of pre-modified and post-modified components.

MATERIAL INFORMATION

Material information is also given in the body of the Service Bulletin. It typically includes the following:

- Material Price and Availability - provides a complete list of parts kits available and the list price, price duration, price break quantity, and delivery information for kits.
- Industry Support Information - items that are to be provided at "no-charge" or at a reduced price should be identified.
- Material Necessary for Each Aircraft/Engine/Component - Items for which standard or military equivalents may be used shall be identified.
- Re-identified Parts - Specify any parts that can be reworked or re-identified and made interchangeable.
- Tooling Price and Availability - when special equipment, such as tools, jigs, fixtures, or test equipment are required to accomplish the modification and it is available, the estimated price and delivery schedule shall be provided, including the manufacturer's name if other than the issuer of the Service Bulletin.
- Accomplishment Instructions
- A section on the Service Bulletin shall contain step-by-step instructions for accomplishing the work.

SERVICE LETTER (SL)

The Service Letter (SL) is the document used to notify the Airlines of the types of information that are not included in Service Bulletins.

MODIFICATIONS AND REPAIRS

Damage shall be assessed and modifications and repairs carried out using data approved by the Agency or by an approved Part-21 design organization, as appropriate.

MAINTENANCE DOCUMENTATION

All maintenance work done must be documented and copies retained of all CRS's issued. Detailed maintenance record copies must be retained for 2 years from date of release of aircraft or component.

Originals shall go with aircraft/component. Records shall be retained in a safe environment with regard fire, flood and theft. Computer back-up discs and tapes etc. shall be stored in different locations to the working disc, tapes etc. to ensure at least one good copy will survive should there be theft or flood etc.

To perform the maintenance, the operator must posses and make permanently available the aircraft manufacturer's approved maintenance data. This takes many forms such as maintenance manuals, structural repair manuals, illustrated parts manuals, wiring diagrams, SB's and more.

MINIMUM EQUIPMENT LISTS

MMEL/MEL

An operator shall establish, for each airplane, a Minimum Equipment List (MEL) approved by the Authority. This shall be based upon, but no less restrictive than, the relevant Master Minimum Equipment List (MMEL) (if this exists) accepted by the Authority. An operator shall not operate an airplane other than in accordance with the MEL unless permitted by the Authority. Any such permission will in no circumstances permit operation outside the constraints of the MMEL.

DDL DISPATCH DEVIATION LIST (OR CDL)

The DDL is also called by some aircraft manufacturer a CDL (Configuration Deviation List). The Configuration Deviation List (CDL) allows for continued operations with missing secondary airframe and engine parts. Approval for operating with these parts missing is authorized by an amendment to the type certificate which as a result requires a Aircraft Flight Manual (AFM) supplement. Any part not included in the CDL must be considered necessary for flight. Therefore, without a CDL, missing secondary airframe and engine parts would ground the airplane until repair or replacement of the part is accomplished.

An approved CDL is evaluated based on Advisory Circular AC 25-7A during flight testing for aircraft certification and contains the necessary takeoff performance decrement, the landing performance decrement, and the en route performance decrement as appropriate for the airplane type.

MINIMUM EQUIPMENT REQUIREMENTS - TEST FLIGHTS

A permit to fly is generally issued when a certificate of airworthiness is temporarily invalid, for example as the result of a damage, or when a certificate of airworthiness cannot be issued for instance when the aircraft does not comply with the essential requirements for airworthiness or when compliance with those requirements has not yet been shown, but the aircraft is nevertheless capable of performing a safe flight. Test flights are includes in this category. EASA permits test flights knowing that minimum equipment requirements for safe flight are met on the aircraft in question. An application for a permit to fly must be submitted.

ETOPS

Within ICAO ETOPS (Extended Twin Operations) has been superseded by EDTO (Extended diversion time operations) since 2012 by ICAO provisions of State Letter SP 59/4.1-11/8 of June 2011. Refer to ICAO Annex 6.1 amendment 36.

Definition:

Extended Diversion Time Operations (EDTO) - Any operation by an airplane with two or more turbine engines where the diversion time to an enroute alternate aerodrome is greater than the threshold time established by the State of the Operator (typically 60 minutes). However the ETOPS rules (AMC 20.6) still apply within the EASA Member States until 2016 and an operator shall not conduct operations beyond the threshold distance determined in accordance with OPS 1.245 unless approved to do so by the Authority (ETOPS approval).

MAINTENANCE PROGRAM

The maintenance program of an aircraft for which ETOPS operational approval is sought, should contain the standards, guidance and instructions necessary to support the intended operation. The specific ETOPS maintenance tasks identified by the (S)TC holder in the Configuration, Maintenance and Procedures document (CMP) or equivalent should be included in the maintenance program and identified as ETOPS tasks.

An ETOPS Maintenance task could be an ETOPS specific task or/and a maintenance task affecting an ETOPS significant system. An ETOPS specific task could be either an existing task with a different interval for ETOPS, a task unique to ETOPS operations, or a task mandated by the CMP further to the in-service experience review (note that in the case ETOPS is considered as baseline in the development of a maintenance program, no "ETOPS specific" task may be identified in the MRB).

The maintenance program should include tasks to maintain the integrity of cargo compartment and pressurization features, including baggage hold liners, door seals and drain valve condition. Processes should be implemented to monitor the effectiveness of the maintenance program in this regard.

PRE-DEPARTURE SERVICE CHECK

An ETOPS service check should be developed to verify the status of the airplane and the ETOPS significant systems. This check should be accomplished by an authorized and trained person prior to an ETOPS flight. Such a person may be a member of the flight crew.

RELIABILITY PROGRAM

The reliability program of an ETOPS operated aircraft should be designed with early identification and prevention of failures or malfunctions of ETOPS significant systems as the primary goal. Therefore the reliability program should include assessment of ETOPS Significant Systems performance during scheduled inspection/testing, to detect system failure trends in order to implement appropriate corrective action such as scheduled task adjustment.

The reliability program should be event-orientated and incorporate:

- Reporting procedures in accordance with section 2: Occurrence reporting
- Operator's assessment of propulsion systems reliability
- APU in-flight start program
- Oil Consumption Program
- Engine Condition Monitoring Program
- Verification Program

COMPETENCE OF CONTINUING AIRWORTHINESS AND MAINTENANCE PERSONNEL (CAMO)

The CAMO (Continuing Airworthiness Maintenance Organization) organization should ensure that the personnel involved in the continuing airworthiness management of the aircraft have knowledge of the ETOPS procedures of the operator.

The CAMO should ensure that maintenance personnel that are involved in ETOPS maintenance tasks:

- Have completed an ETOPS training program reflecting the relevant ETOPS procedures of the operator, and,
- Have satisfactorily performed ETOPS tasks under supervision, within the framework of the Part-145 approved procedures for Personnel Authorization.

TRAINING PROGRAM

For personnel involved in the continuing airworthiness and maintenance of the ETOPS Fleet the operator's ETOPS training program should provide initial and recurrent training for as follows:

- Introduction to ETOPS Regulations
  - Contents of AMC 20-6
  - ETOPS Type Design Approval – brief synopsis
- ETOPS Operations Approval
  - Maximum approved diversion times and time limited systems capability
  - Operator's Approved Diversion Time
  - ETOPS Area and Routes
  - ETOPS MEL
  - ETOPS Continuing Airworthiness Considerations
  - ETOPS Significant Systems
  - CMP & ETOPS aircraft maintenance program
  - ETOPS pre-departure service check
  - ETOPS reliability program procedures
- Engine/APU oil consumption monitoring
- Engine/APU Oil analysis
- Engine conditioning monitoring
- APU in-flight start program
- Verification program after maintenance
- Failures, malfunctions and defect reporting
- Propulsion System Monitoring/Reporting
- ETOPS significant systems reliability
  - Parts and configuration control program
  - CAMO additional procedures for ETOPS
  - Interface procedures between Part-145 organization and CAMO

ALL WEATHER OPERATIONS (CAT 2 AND 3 OPERATIONS)

Definitions:

- Category II - Landing following a precision approach using an Instrument Landing System or Microwave System with a decision height of below 200 feet but not less than 100 feet. Runway visual range: not less than 300 meters.
- Category IIIA - Landing following a precision approach using an Instrument Landing System or Microwave System with a decision height of below 100 feet. Runway visual range: not less than 200 meters.
- Category IIIB - Landing following a precision approach using an Instrument Landing System or Microwave System with a decision height of below 50 feet. Runway visual range: less than 200 meters but not less than 75 meters.

AIR OPERATIONS SUBPART-E

Air Operations Subpart-E 1.440 determines the requirements set for Category II, IIIA and IIIB operations, and low visibility takeoffs.

LOW VISIBILITY OPERATIONS — GENERAL OPERATING RULES (OPS 1.440)

An operator shall not conduct Category II or III operations unless:

- Each airplane concerned is certificated for operations with decision heights below 200 ft, or no decision height, and equipped in accordance with CS-AWO on all-weather operations or an equivalent accepted by the Authority;
- A suitable system for recording approach and/or automatic landing success and failure is established and maintained to monitor the overall safety of the operation;
- The operations are approved by the Authority;
- The flight crew consists of at least 2 pilots; and
- Decision height is determined by means of a radio altimeter.

An operator shall not conduct low visibility takeoffs in less than 150 m RVR (Category A, B and C airplanes) or 200 m RVR (Category D airplanes) unless approved by the Authority.

MAINTENANCE

GENERAL

The air operator's maintenance control system must address all applicable equipment listed in the component concordance tables which includes the quantity required, the minimum required and all applicable aircraft maintenance tests as applicable in the AFM and/or Maintenance Manual.

While there may be differences in the operational capability, avionics equipment capability level and required maintenance, between aircraft certified for CAT II operation and those certified for CAT III, this section does not distinguish between those differences; i.e., the details provided in the operator's maintenance control system will be predicated on the level of operation for which the program is developed.

EQUIPMENT APPROVAL

The configuration or specifications of the equipment installed for CAT II or III operation must be certified. For CAT I certified aircraft, additional avionics equipment and/or modification to or substitution of installed equipment may be necessary in an upgrading program leading to CAT II or III certification. This may be accomplished by an OEM modification or by STC as part of a modification. The instructions for continued airworthiness (ICA) for the aircraft must include supplemental ICAs which address these modifications.

A newer aircraft may be type certificated for CAT II/III when delivered to an operator and consequently will already have applicable ICA that address CAT II/III maintenance requirements.

MAINTENANCE CONTROL SYSTEM

The following general requirements relate to the development of an operator's maintenance control system in support of CAT II/III operations.

To ensure the high level of performance and reliability required for aircraft automatic flight control and related systems for CAT II/III certification and operation, the operator's technical dispatch procedures and maintenance schedule(s) must take into account the requirements of CAT II/III operations.

An operator may apply for approval of their proposed maintenance schedule in advance of a formal application being submitted for CAT II/III approval. When submitting the proposed maintenance schedule for approval, the operator should indicate that Cat II/III operation is intended. The responsible TCCA inspector will review the maintenance schedule development to become familiar with it and to provide guidance to the operator.

MAINTENANCE CONTROL MANUAL

The Maintenance Control Manual must address at least the following:

- Maintenance, calibration and verification of the accuracy of the aircraft systems related to CAT II or III operation, in accordance with the type certificate holder's ICAs, any applicable supplemental ICAs and requirements included in the approved maintenance schedule;
- Technical dispatch procedures for CAT II or III operations that includes;
  - Rating of the aircraft from CAT II or III status because the integrity of one or more of the systems required for such operation is in doubt;
  - Rating of the aircraft because of a defect, inspection or calendar criteria, if applicable; and
  - Returning the aircraft to CAT II or III status following required maintenance;
- Initial and update training for all personnel that have tasks related to CAT II/III maintenance schedule including log book entries, placarding and returning to service criteria; and
- Reliability monitoring program that includes procedures for reporting findings.

Question: 7-1

_____ are periodic inspections that have to be done on all commercial/civil aircraft after a certain amount of time or usage.

Question: 7-2

It is _____ for an aircraft operator to comply with an Airworthiness Directive.

Question: 7-3

Aircraft customers (operators) may exercise their discretion whether or not to incorporate _____.

Question: 7-4

The ability to operate _____ is constantly in question and can be withdrawn at any time.

Question: 7-5

ETOPS regulations concern twin-engine aircraft being able to be more than _____ minutes from any diversion airport.

Question: 7-6

A Categroy II or, Cat 2, landing decision height is below 200 feet but not less than _____ feet.

ANSWERS

Answer: 7-1
Maintenance checks.

Answer: 7-2
mandatory.

Answer: 7-3
service bulletins.

Answer: 7-4
"ETOPS".

Answer: 7-5
60.

Answer: 7-6
100.

Answer: 1-7
Question text.

Answer: 1-8
Question text.

ACI	/	Airports Council International
AD	/	Airworthiness Directive
AEA	/	Association of European Airlines
AFM	/	Aircraft Flight Manual
AIS	/	Airmen Information Service
ALI	/	Airworthiness Limitation Item
ANS	/	Air Navigation Services
AOC	/	Air Operator Certificate
APU	/	Auxiliary Power Unit
ATA	/	Air Transport Association
ATM	/	Air Traffic Management
BITE	/	Built In Test Equipment
CAMO	/	Continuous Airworthiness Maintenance Organization
CAMP	/	Continuous Airworthiness Maintenance Program
CAS	/	Calibrated Airspeed
CJEU	/	Court of Justice of the European Union
CMC	/	Central Maintenance Computer
CMP	/	Configuration, Maintenance, and Procedures
CMR	/	Certification Maintenance Requirement
CDL	/	Configuration Deviation List
CPCP	/	Corrosion Prevention and Control Program
CofA	/	Certificate of Airworthiness
CRS	/	Certificate of Release to Service
CS	/	Certification Specification
EASA	/	European Aviation Safety Agency
EC	/	European Commission
EPA	/	European Parts Approval
ETDO	/	Extended Diversion Time Operation
ETOPS	/	Extended Twin Operations
ETSO	/	European Technical Standard Order
EU	/	European Union
FAA	/	Federal Aviation Administration
FAR	/	Federal Aviation Regulation
FEC	/	Failure Effect Category
FH	/	Flight Hours
FL	/	Flight Level
GVI	/	General Visual Inspection
HMV	/	Heavy Maintenance Visit
IAOPA	/	International Council Aircraft Owners and Pilots Association
IATA	/	International Air Transportation Association
ICAO	/	International Civil Aviation Organization
IFALPA	/	International Federation of Airline Pilots Association
IFR	/	Instrument Flight Rules
IMA	/	Integrated Modular Avionics
IMO	/	International Maritime Organization
ISG	/	Industry Steering Committee

ITU	/	International Telecommunication Union
JAA	/	Joint Aviation Authority
JAR	/	Joint Aviation Requirements
MEL	/	Minimum Equipment List
MMEL	/	Master Minimum Equipment List
MNPS	/	Minimum Navigation Performance Specification
MOE	/	Maintenance Organization Exposition
MPD	/	Maintenance Planning Document
MRB	/	Maintenance Review Board
MRO	/	Maintenance, Repair, Overhaul
MSG	/	Maintenance Steering Group
MSI	/	Maintenance Significant Item
MTBF	/	Mean Time Between Failures
MTBUR	/	Mean Time Between Unscheduled Removals
MTOE	/	Maintenance Training Organization Exposition
MTOP	/	Maximum Takeoff Power
MWG	/	Maintenance Working Group
NAA	/	National Aviation Authority
NOTAM	/	Notice to Airmen
OEM	/	Original Equipment Manufacturer
PICAO	/	Provisional International Civil Aviation Organization
PPH	/	Policy and Procedures Handbook
R&M	/	Repair and Maintenance
RNAV	/	Area Navigation
RTCA	/	Radio Technical Commission For Aeronautics
RVSM	/	Reduced Vertical Separation Minima
SB	/	Service Bulletin
SIL	/	Service Information Letter
SL	/	Service Letter
SSI	/	Structural Significant Item
STC	/	Supplemental Type Certificate
TC	/	Type Certificate
UN	/	United Nations
VFR	/	Visual Flight Rules
WHO	/	World Health Organization
WMO	/	World Meteorological Organization
ZIP	/	Zonal Inspection Program

Subpart-A: Applicability and Definitions
Subpart-B: General
Subpart-C: Operator Certification and Supervision
Subpart-D: Operational Procedures
Subpart-E: All Weather Operations
Subpart-F: Performance General
Subpart-G: Performance Class A
Subpart-H: Performance Class B
Subpart-I: Performance Class C
Subpart-J: Mass and Balance
Subpart-K: Instruments and Equipment
Subpart-L: Communication and Navigation Equipment
Subpart-M: Aeroplane Maintenance
Subpart-N: Flight Crew
Subpart-O: Cabin Crew
Subpart-P: Manuals, Logs and Records
Subpart-Q: Flight/Duty Time Limitations and Rest Requirements
Subpart-R: Transport of Dangerous Goods by Air
Subpart-S: Security

Extended Diversion Time Operations (EDTO)
Any operation by an airplane 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.

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Category IIIA - Landing following a precision approach using an Instrument Landing System or Microwave System with a decision height of below 100 feet. Runway visual range: not less than 200 meters.

Category IIIB - Landing following a precision approach using an Instrument Landing System or Microwave System with a decision height of below 50 feet. Runway visual range: less than 200 meters but not less than 75 meters.

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