

Engineering Licensing

Part-66/147

Learning Outcomes

By the end of this session delegates will be able to:

- List the categories of Part 66 license
- Discuss the basic knowledge requirements
- State the experience requirements
- Describe the license application process
- List the types of training license. ■ Discuss the requirements for an Approved Training Organization

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Commission Regulation (EC) No 2042/2003.

- EC Regulation 2042/2003 is one of two EC regulations that fall under Regulation (EC) No 216/2008 (originally 1592/2002) that lays down the common rules in the field of civil aviation and established the European Aviation Safety Agency.
- Article 7 of EC Regulation 2042/2003 states:
- “This regulation shall enter into force on the day following that of its publication in the Official Journal of the European Union.”
- The regulation was published on 28th November 2003

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Commission Regulation (EC) No 2042/2003.

- EC1149/2011 was published in November 2011 which introduces some significant changes to Part-66 as follows;
 - Introduction of the B3 license
 - Restructuring of Aircraft Group classification into 3 groups
 - Increase of the period allowed to gain qualification for basic license
 - Period of validity of type training certificates restricted to 3 years
 - Increase of syllabus for Category B2
 - Change to examinations to allow clear pass/fail criteria
 - Introduction of minimum times for type training courses
 - Formalisation of practical type training

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Commission Regulation (EC) No 2042/2003.

- Regulation contains four Parts:
 - Part M Airworthiness Requirements
 - Part 145 Maintenance organization
 - Part 66 Engineer Licensing
 - Part 147 Engineer Training
- These parts are integrated in such a manner that they, particularly Part 66, cannot be treated in isolation

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- Part-66 is divided into two sections

Section A – Technical Requirements

Are the requirements to be met by industry and those requiring an Aircraft Maintenance license.

Section B – Procedure for Competent Authority

Are the requirements to be followed by the competent authorities.

- A “Competent authority” must be nominated by the member state. Any state may nominate more than one “competent authority”.

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There are Five Categories of the Part 66 license

Category A

Category B1

Category B2

Category B3

Category C

A sixth “ELA” Category is in development for gliders, balloons and airships

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Categories A and B1 are subdivided into: A1 and B1.1 – Aeroplanes

Turbine

A2 and B1.2 – Aeroplanes Piston

A3 and B1.3 – Helicopters Turbine

A4 and B1.4 – Helicopters Piston

Aircraft weight or size are not applicable to a Part 66 license except for the B3 Category.

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- Category A - permits the holder to issue a CRS following minor scheduled maintenance and simple defect rectification as endorsed on his/her authorization
- Category B1 – permits the holder to issue a CRS following maintenance, including aircraft structure, power-plant, mechanical and electrical systems, and replacement of avionic line replaceable units requiring simple test to prove serviceability

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- Category B2 – permits the holder to issue a CRS following maintenance on avionic and electrical systems.

Post 1st August 2012 these privileges will be extended to cover limited and simple electrical and avionic tasks in mechanical systems as endorsed on the certification authorization, which is restricted to work personally performed and limited to the specific type ratings endorsed on the license.

- Category B3 – permits the holder to issue a CRS following maintenance performed on aeroplane structure, power-plant , mechanical and electrical systems and including work on avionic systems requiring only simple tests to prove serviceability and not requiring troubleshooting.

- Category C – permits the holder to issue a CRS following base maintenance on aircraft. The privileges apply to the aircraft in its entirety in a Part 145 organization.

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It may be noted that the term “Electrical Systems” has appeared under both the B1 and B2 license categories

Although the words are the same, the systems are not.

Common to both is power generation and supply but after the distribution busbars;

The Category B1 is responsible for all electrical wiring and equipment in mechanical systems such as fuel, hydraulics and air conditioning.

The Category B2 is responsible for all electrical aspects of Avionic (electronic) systems. Certification of electrical aspects of mechanical systems including the instrumentation of those systems, is restricted to limited and simple tasks not including trouble shooting as defined in their personal certification authorisation.

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The Winds of Change

- The Category B3 is applicable to piston-engine, non-pressurized aeroplanes of 2000kg MTOM and below
- The submission to the European Commission detailing a European Light Aircraft (ELA) license for Aeroplanes, Gliders and Airships below 1000kg has been rejected and returned to the European Aviation Safety Agency for re-consideration

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- Basic knowledge requirements

The Part 66 syllabus currently (as of 1st August 2012) comprises 22 modules. Module 1 to 10 are common to Categories B1 and B2 except for module 7B and 9B which are exclusive to the Category B3.

All modules except for 4, 7B, 9B,13,14 and 17B are applicable to Category A.

- Modules 11A,15 and 17 are required for B1.1
- Modules 11B,16 and 17 are required for B1.2
- Modules 12 and 15 are required for B1.3
- Modules 12 and 16 are required for B1.4
- Modules 13 and 14 are required for B2
- Modules 11C, 16 and 17B are required for B3 and modules 7 & 9 are replaced with 7B and 9B

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The Modules (M) are:

- M1 Mathematics
- M2 Physics
- M3 Electrical Fundamentals
- M4 Electronic Fundamentals
- M5 Digital Techniques Electronic Instrument Systems
- M6 Materials and Hardware
- M7 Maintenance Practices
- M7B Maintenance Practices for Category B3
- M8 Basic Aerodynamics
- M9 Human Factors
- M9B Human Factors for Category B3
- M10 Aviation Legislation

Modules continued:

M11A Turbine Aeroplane Aerodynamics, Structures and Systems

M11B Piston Aeroplane Aerodynamics, Structures and Systems

M11C Piston Aeroplane Aerodynamics, Structures and Systems for Category B3

M12 Helicopter Aerodynamics, Structures and Systems

M13 Aircraft Aerodynamics, Structures and systems

M14 Propulsion

M15 Gas Turbine Engine

M16 Piston Engine

M17 Propeller

M17B Propeller for Category B3

Modules continued:

M11A Turbine Aeroplane Aerodynamics, Structures and Systems

M11B Piston Aeroplane Aerodynamics, Structures and Systems

M11C Piston Aeroplane Aerodynamics, Structures and Systems for Category B3

M12 Helicopter Aerodynamics, Structures and Systems

M13 Aircraft Aerodynamics, Structures and Systems

M14 Propulsion

M15 Gas Turbine Engine

M16 Piston Engine

M17 Propeller

M17B Propeller for Category B3

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- The latest amendment to Part-66 has significantly changed the question numbers listed in Appendix II
- All examinations now contain a number of questions divisible by 4 to provide distinct 75% pass/fail criteria
- The new Part-66.A.25(b) introduced a 10 year period for completion of the modular examinations but the license must also be gained in this period to meet the requirements of 66.A.30(f)

EASA Part 66

- Knowledge requirements for Category C are as for B1 or B2 except that, an applicant holding an academic degree in a technical discipline, from a university or other higher educational institution recognized by the competent authority, may be granted a Category C license
- Three years of experience working in a civil aircraft maintenance environment including six months of observation of base maintenance tasks are required in support of such a Category C application

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Experience requirements.

66.A.30

These requirements vary greatly dependent on type of experience gained and attendance on recognized training courses.

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Experience requirements. 66.A.30

- Cat A and subcategories B1.2 , B1.4 and B3.
- Three years of practical maintenance on operating aircraft if applicant has no previous technical training:
or
- Two years of practical maintenance on operating aircraft and
completion of training considered by the competent authority as a skilled worker, in a technical trade:
or
- One year of practical maintenance on operating aircraft and completion of a Part 147 basic training

EASA Part 66

Experience requirements. 66.A.30

- Cat A and subcategories B1.2 , B1.4 and B3.
- Three years of practical maintenance on operating aircraft if applicant has no previous technical training:
or
- Two years of practical maintenance on operating aircraft and
completion of training considered by the competent authority as a skilled worker, in a technical trade:
or
- One year of practical maintenance on operating aircraft and completion of a Part 147 basic training

EASA Part 66

Experience requirements 66.A.30

Cat B1.1, B1.3 and B2

- Five years of practical maintenance on operating aircraft if applicant has no previous relevant technical training:
or
- Three years of practical maintenance 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 on operating aircraft and completion of a Part 147 approved basic training course.

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Experience requirements 66.A.30

Cat B1.1, B1.3 and B2

- Five years of practical maintenance on operating aircraft if applicant has no previous relevant technical training:
or
- Three years of practical maintenance 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 on operating aircraft and completion of a Part 147 approved basic training course.

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Experience requirements

Cat C

- For large aircraft:

Three years of experience exercising category B1.1, B1.3 or B2 privileges on large aircraft or as a Part 145 B1.1, B1.3 or B2 support staff, or, a combination of both:

or

Five years of experience exercising category B1.2 or B1.4 privileges on large aircraft or as a Part 145 B1.2 or B1.4 support staff, or a combination of both: **(note that Cat B3 is not included)**

or

- For non large aircraft:

Three years of exercising category B1 or B2 privileges on non large aircraft or as Part 145 B1 or B2 support staff or a combination of both: **(note that Cat B3 is not included)**

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- The Basic Part 66 license does NOT confer certification privileges.
- Cat A certification authorisations may be issued by the Part 145 organization in accordance with the list at AMC 145.A. 30(g)
- Cat B1, B2 and C authorizations may only be issued against those type ratings included on the license taking into consideration any limitations detailed.
- Additionally (post 1st August 2012) the Cat B2 may be authorized to issue a CRS for “electrical and avionic tasks within power-plant and mechanical systems, requiring only simple tests to prove their serviceability; and [minor line maintenance and simple defect rectification of tasks specifically endorsed on the certification authorization]” This applies only to type ratings included on the license and does not equate to Cat A privileges.

EASA Part 66

Conversion and Issue

- The UK CAA commenced issue of Part 66 license for aircraft above 5700kgs on 1st June 2004.
- Issue of Part 66 licenses for aircraft below 5700kgs commenced on 28th November 2004.
- The CAR Section L license has been replaced with the Part-66 license for all EASA aircraft, with the exception of Annex II types, as of 28th September 2008.

EASA Part 66

Conversion

- As of 28th November 2004 any JAR 66 or CAR Section L license was converted to a Part 66 license on renewal or application for conversion. These licenses were issued with or without limitations as appropriate.
- To remove limitations, the appropriate whole module or part module examinations must be successfully completed and appropriate experience gained.

EASA Part 66

Conversion

- The conversion process was conducted in accordance with a Conversion Review Board initially approved by the JAA in February 1999 and amended to meet Part-66 requirements in 2004
- The conversion process conducted by the UK CAA is unique to the UK BCAR Section L license and the approved procedures that were in place in the United Kingdom prior to 1st June 2001

EASA Part 66

Processing of license Applications

- license applications are processed in a manner as decided by the competent authority.
- In accordance with Part-66.B.10(c), the competent authority shall establish procedures detailing how compliance with Part-66 is met.
- These procedures should include;
 - Method used to process all applications.
 - Establishment of a conversion report and definition of any limitations applicable
 - Examinations and experience required to remove limitations
 - Maintenance of records

EASA Part 66

Type Ratings

In all cases, the certification of an aircraft requires the license to be extended with the appropriate type rating.

- For aircraft included in sections 1, 2 and 11 of Annex I Appendix I (currently Decision No 2010/011/R) approved type training is required. This may take the form of either a Part-147 approved type training course or a course directly approved by the competent authority.
- For aircraft included in all other sections of Annex I Appendix I, an examination is required in accordance with Part-66 Appendix III paragraph (4)

The above will be amended in the near future to reflect the **THREE** group definitions introduced by EC 1149/2011.

EASA Part 66

Aircraft Type ratings

EC 1149/2011 introduces a different group structure for aircraft type ratings in Part-66.A.5.

66.A.5 Aircraft Groups.

- Group 1: complex motor-powered aircraft as well as multiple engine helicopters, aeroplanes 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.
- Aircraft in this group require approved type training for inclusion on a Part-66 license.

EASA Part 66

Aircraft Type ratings

Group 2: aircraft other than those in Group 1 belonging to the following subgroups:

- sub-group 2a: single turbo-propeller engine aeroplanes
- sub-group 2b: single turbine engine helicopters
- sub-group 2c: single piston engine helicopters

For aircraft in this group either type training or type examination is required for license issue.

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Aircraft Type ratings

Group 3: piston engine aeroplanes other than those in Group 1

For aircraft in this group either type training or type examination is required for license issue.

Type ratings will not be endorsed on the Category B3 as the appropriate rating is ;

“piston-engine non-pressurized aeroplanes of 2000Kg and below”

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Application for a license

- An application for an aircraft maintenance license or change to a license (apart from change of address) must be made on a Form 19 in a manner established by the competent authority in accordance with 66.A.10(a)
- Any change to a license such as the extension with a type rating shall be made to the member state that initially issued the license
- An applicant for an aircraft maintenance license shall be at least 18 years of age in accordance with 66.A.15
- An example of the EASA Form 19 Application form is given at Appendix V to part-66. The competent authority may modify the example but only to include *additional* information

EASA Part 66

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EASA Part 66

Processing of license Applications

- The competent authority should also establish sufficient staff to assess, administer and issue all license applications.
- Staff should be nominated and terms of reference issued.
- Training courses should be established to initially train all licensing staff and deliver continuation training
- Systems, such as hard copy or Information Technology, should be established to provide for license production and record keeping

EASA Part 66

Examination by the Competent Authority

- Part-66.B.200 details the requirements for delivery of basic examinations by the competent authority.
- The requirements are supported by significant information contained in the Guidance Material for 66.B.200.
- The competent authority may approve a Part-147 Basic Maintenance Training organization to deliver the basic examination on their behalf, however, any such organization must also be approved to deliver the requisite basic training course.
- Part-147.A.145 (e) prohibits conduct of examination unless approved to conduct training

EASA Part 66

Examination Credit

- Part-66.B.400 and 405 detail the requirements for establishing recognition of a qualification other than examination by the competent authority or conducted within a Part-147 Approved organization but which may meet the equivalence of the requirements of Part-66 Appendices I and II.
- By definition any such accreditation will entail extensive investigation and ongoing monitoring may be required where a qualification such as a degree is concerned.

Enforcement

It may be necessary to revoke, suspend or limit a maintenance license in accordance with the requirements of 66.B.500 as a result of any of the following items;

- Obtaining a license using false documents
- Failing to carry out requested maintenance and failing to report such fact
- Failing to carry out maintenance resulting from own inspection and failing to report such fact
- Negligent maintenance
- Falsification of maintenance record
- Issue of a CRS with the knowledge that the prescribed maintenance has not been carried out.
- Carrying out maintenance or issuing CRS when under the influence of alcohol or drugs
- Issuing a CRS whilst not in compliance with Part-66

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Mutual exchange of Information

- As can be understood from the previous slide, exchange of information within the member states is imperative if we are to share our knowledge and issues and achieve a common standard throughout all participating states.
- There are several methods of communicating, Standards meetings for each of the codes attended by all member states, MTOAP meetings which are attended by the states conducting oversight of approved organizations on behalf of CAA.
- All of the above are the formal methods of communication but as the community integrates and we meet others in similar working positions then a great deal of communication is between competent authorities.

A final thought

- With the advent of new technology it is becoming increasingly apparent that the current licensing methods need to be carefully reviewed.
- The majority of the aircraft entering service are radically different from the machines that we are familiar with particularly with regard to replacement of technologies such as electrical power replacing hydraulic power and minimizing the energy extracted from the engine for purposes other than propulsion.
- When issuing a type rated license it is important to understand the implication of any national limitations.

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QUESTIONS?