COMMENT RESPONSE DOCUMENT (CRD) TO NOTICE OF PROPOSED AMENDMENT (NPA) 2008-03

for amending Commission Regulation (EC) No 2042/2003 of 20 November 2003 on the continuing airworthiness of aircraft and aeronautical products, parts and appliances, and on the approval of organisations and personnel involved in these tasks

and

for amending the Executive Director Decision No 2003/19/RM of 28 November 2003 on Acceptable Means of Compliance and Guidance Material to Commission Regulation (EC) No 2042/2003 on the continuing airworthiness of aircraft and aeronautical products, parts and appliances, and on the approval of organisations and personnel involved in these tasks

"Licences for non-complex aircraft maintenance engineers"

Explanatory Note

I. General

1. The purpose of the Notice of Proposed Amendment (NPA) 2008-03 was to propose an amendment to:

   - Commission Regulation (EC) No 2042/2003[1] of 20 November 2003 laying down implementing rules for the continuing airworthiness of aircraft and aeronautical products, parts and appliances, and on the approval of organisations and personnel involved in these tasks, and to
   - Decision of the Executive Director of the Agency N° 2003/19/RM of 28 November 2003[2].

   The corresponding rulemaking task was 66.022b, which was developed by the Part-66 subgroup of task M.017.

   This NPA proposed a licensing system for non-complex aircraft certifying staff, including:
   - a B3 licence for sailplanes, powered sailplanes and piston engine non-pressurised aeroplanes of 2000 Kg maximum take-off weight and below,
   - an ELA licence for sailplanes, motor-powered sailplanes, aeroplanes below 1000Kg MTOM, balloons and certain categories of airships.

II. Consultation

2. The NPA 2008-03 was published on 28 March 2008 on the web site of the Agency at: (http://www.easa.europa.eu/ws_prod/r/r_archives.php).

   By the closing date of 28 June 2008, the European Aviation Safety Agency ("the Agency") had received 177 comments from 39 National Aviation Authorities, professional organisations and private companies.

III. Publication of the CRD

3. All comments received have been acknowledged and incorporated into this Comment Response Document (CRD) with the responses of the Agency.

4. In responding to comments, a standard terminology has been applied to attest the Agency's acceptance of the comment. This terminology is as follows:

   - **Accepted** – The comment is agreed by the Agency and any proposed amendment is wholly transferred to the revised text.
   - **Partially Accepted** – Either the comment is only agreed in part by the Agency, or the comment is agreed by the Agency but any proposed amendment is partially transferred to the revised text.

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[1] Regulation (EC) No 2042/2003 of 20 November 2003 on the continuing airworthiness of aircraft and aeronautical products, parts and appliances, and on the approval of organisations and personnel involved in these tasks, OJ L 315, 28.11.2003, p. 1. Regulation as last amended by Commission Regulation (EC) No 1056/2008 of 27 October 2008 (OJ L 283, 28.10.2008).

[2] Decision No 2003/19/RM of the Executive Director of the European Aviation Safety Agency of 28 November 2003 on acceptable means of compliance and guidance material to Commission Regulation (EC) No 2042/2003 of 20 November 2003 on the continuing airworthiness of aircraft and aeronautical products, parts and appliances, and on the approval of organisations an personnel involved in these tasks. Decision as last amended by Decision 2009/008/R of 24 March 2009.

- **Noted** – The comment is acknowledged by the Agency but no change to the existing text is considered necessary.
- **Not Accepted** - The comment or proposed amendment is not shared by the Agency

The resulting text placed at the end of the document highlights the changes as compared to the current rule.

5. The Agency Opinion will be issued at least two months after the publication of this CRD to allow for any possible reactions of stakeholders regarding possible misunderstandings of the comments received and answers provided.

6. Such reactions should be received by the Agency not later than 17 November 2009 and should be submitted using the Comment-Response Tool at http://hub.easa.europa.eu/crt.

IV. Main changes introduced after the NPA

7. It is important to note that the licensing system proposed in this CRD has been developed taking into account also the comments received after publication of NPA 2007-07, especially those related to "Type ratings and Group ratings".

8. It is also important to note that at the time of the publication of this CRD document, the final definition of ELA1 aircraft is still under review by task MDM.032, in particular the limits related to the maximum take-off mass. Once the MDM.032 task is finalised, it will be possible that the definitions introduced in this CRD and in Article 1 of EC Regulation 1056/2008 are further modified.

9. Coming now to the main changes introduced in this CRD after the NPA consultation phase, they can be summarised as follows:

10. The designation "category ELA licence" has been replaced by "category L licence" in order to avoid confusion with the ELA process envisaged by task MDM.032, and also taking into account that the aircraft covered by this L licence include all the ELA1 aircraft plus some ELA2 aircraft (balloons and some airships).

11. In points 145.A.30, 145.A.35 and 145.A.70, the list of licence categories referred to are extended to include the L category because aeroplanes of less than 1000Kg, sailplanes and motor-powered sailplanes may be maintained by Part-145 organisations.

12. For the category L licence:

a) The level "Basic ELA" has been replaced by "Limited-L".

b) The term "basic ratings" has been replaced by "ratings".

c) Within the "Full-L" licence, a new rating "Radio-Comm/Transponder", independent from other ratings, has been introduced.

13. In 66.A.25(b), the possibility has also been given to the Competent Authority to conduct the examinations required for the L-licence.

14. Point 66.A.30(a)6, 7 and 8 of the NPA required 1 or 2 years of experience (depending on whether basic training and examination or just examination had been performed) in order to get the Limited-L licence, plus 2 years of experience in order to move from Limited-L to Full-L. Therefore, the total number of years of experience required to get the Full-L licence was between 3 and 4, which was longer than the period of experience required in order to get the B3 and B1.2 licences.

Since this was not reasonable, taking into account the lower complexity of the aircraft covered by the L licence, these periods of time of experience have been reduced by half in this CRD and, as a safeguard provision, it has been further required that as a minimum the experience has to cover a representative cross-section of maintenance activities in the corresponding rating. This has been further explained in AMC 66.A.30(6) & (7) in order to cover at least 50% to 80% of tasks of Appendix II to AMC (depending on the type of aircraft).

15. The transition provision contained in the NPA in 66.A.100 which allowed a period of 5 years after entry into force where the L-licence could coexist with national qualifications has been reduced to 3 years and has been transferred to EC2042/2003, Article 7, paragraph 8. This should be enough, taking also into account that conversion of existing national qualifications will be possible as it is explained later.

16. The category B3 licence has been restricted to cover only "piston engine non pressurized aeroplanes of 2000 Kg MTOM and less". It will not cover sailplanes and motor-powered sailplanes, which are already covered by the L licence.

17. In order to simplify the proposed licensing system:

a) The limitations of the B3 licence linked to aircraft systems have been removed, keeping only the limitations related to the structure material of the aircraft.

b) The limitations of the L licence, which were all related to aircraft systems, have been removed. It is important to note here that the L licence already has different ratings depending on the structure material of the aircraft.

This amendment has been coordinated with the group 66.009, and a similar amendment will be introduced when the CRD 2007-07 is published, keeping only limitations related to the structure material of the aircraft and to pressurised aircraft for the B1 licence for Group 3 aircraft.

The reasons for removing the limitations related to systems (retractable landing gear, variable pitch propeller, turbocharged engine, FADEC, etc) are the following:

- It could be argued why these systems had been selected and not others.
- The system for endorsing and removing limitations may create a significant burden for competent authorities and licence holders.
- Nevertheless, the licence holder still has to cover all the basic knowledge and experience requirements.
- As a compensating measure, a provision will be introduced in CRD 2007-07 in point 66.A.20(b), with additional AMC material, in order to make very clear that the certifying staff cannot exercise privileges unless he/she is competent on the particular aircraft. This reinforces the current responsibility of the maintenance organisation or of the independent certifying staff to ensure this competence prior to releasing an aircraft.

18. In 66.A.45(i), the possibility has also been given to the Competent Authority to conduct the examinations required to remove the limitations of the B3 licence.

19. Although the Explanatory Note of NPA2008-03 explained that conversion provisions for B3 and L-licences were not envisaged, the very significant number of comments received opposing to this approach and adequately justifying such conversion has led the Agency to allow them. Nevertheless, there is no need to change the text of the current rule because 66.A.70 already permits such conversion.

20. In Appendix I to Part-66, a note has been introduced at the beginning of modules 7, 9 and 17 (similar to the currently existing note in module 11B) to require that the content

of the course for the B3 category licence is developed considering the lower complexity of technology found in this aircraft category. The purpose of this new provision is to be able to justify the reduction of duration of the B3 basic course from the currently required 2000 hours of the B1.2 licence to the proposed 1000 hours. On the other hand, this will need to be considered when extending an existing B3 licence to other categories, meaning that these modules may not be fully credited even when the subjects and levels of training are the same.

21. The corresponding Appendix I to Part-147 has been modified to show the new duration of 1000 hours for the B3 basic course.

22. In Appendix II to Part-66, the number of questions for the Basic Examination Standard for the B3 licence has been adjusted to be multiple of 4, in order to meet the criteria of the 75% success rate at examination, with the time allocated for answers being modified accordingly.

23. In Appendix V to Part-66, the Form 19 (Application Form) and the Form 26 (Example of licence format) have been adjusted to reflect the new licence categories, ratings and limitations. In addition, it has been clarified that the limitations included in the Part-66 licence are tasks which are excluded from the certification privileges.

24. In Appendix V to Part-66, the Form 26 for the licence format has been split in 2 forms in order to make clear that the L-licence cannot be upgraded to the other categories, unless full requirements are met:

    a) Form 26A for the A, B1, B2, B3 and C category licences.

    b) Form 26B for the L category licence.

25. Appendix VI and VII to Part-66 have been renamed as Appendix VII and VIII. The reason is that Appendix VI has been reserved for future use (it has been recently agreed with the Commission, in an EASA Committee, that the current Appendix V is split in two Appendixes, one for the Form 19 and another for the Form 26).

26. In Appendix VII to Part-66, the table showing the L modules courses required for each rating and the table with the knowledge levels have been re-structured for clarity.

27. In Appendix VII to Part-66, the number of L modules has been changed from 14 to 13 due to:

    a) Combination of the modules related to powerplant.

    b) Addition of a module for Radio-comm/transponder.

28. Appendix II to Part-147 has been modified to reflect the changes in categories, rating designations and limitations.

29. AMC to 66.A.25(b) has been modified to state that the L4 module (in Appendixes VII and VIII) includes structures made of "metal tube and fabric" within the "wooden aeroplane".

30. Additional material has been introduced into AMC to 66.A.45(i) regarding the practical experience necessary to include the rating B3 on the licence and to remove limitations.

31. Appendix II to AMC to Part-66 "aircraft type practical experience list of tasks" has been modified to add specific tasks related to sailplanes, motor-powered sailplanes and balloons. In addition, for balloons, special provisions have been introduced in relation to particular tasks that in all cases should be completed.

NOTE: The final proposed text, indentifying the differences with the current text, is contained in the Appendix A at the end of this document, after the replies to the comments.

IV. CRD table of comments, responses and resulting text

(General Comments) -

comment *5* comment by: *CAA CZ*

The CAA CZ welcomes the opportunity to comment on the EASA NPA No 2008-03 and supports the proposal in question without comments.

response *Noted*

comment *67* comment by: *ENAC, Italy, Production and Maintenance Directorate*

Comment 1

As an alternative to the new Part 66 envisaged by this NPA, and after an internal review of this NPA and of the other NPAs/Opinions currently under discussion for Part 66 and Part M, we propose to combine some provision designed for B3 with some other designed for ELA licence in order to make the rule as simple as possible both for NAAs and for undertakings.

Proposal 1

1. Delete completely the new B3 licence and all envisaged changes in Part 145, since Part 66 and Part 145 systems should not be made more complex and current B1.2 AML is already tailored for non Annex II piston engine aircraft (mostly light general aircraft). Moreover the envisaged knowledge requirements for B3 licences are not much lower than those for B1.2 but a subsequent upgrade into B1 licences would be very difficult since all B3 modules are different than those required for any B1 licences. A simple change in the fleet of a small operator, from light twin aircraft slightly below 2000 kg MTOM to light twin aircraft slightly above 2000 kg could lead all B3 staff in a maintenance organisation to lose their job since becoming redundant.

2. Retain the provision for a full ELA licence, but amend in 66.A.1 the scope to include every ELA1 and ELA2 aircraft

3. Add a very light rotorcraft rating for ELA licence (if not possible in this stage, due to the need to develop new Appendix VI training requirements, it could be done later)

4. Modify envisaged system of 18 different ratings for Basic-ELA and Full-ELA licences and keep only one set of basic ratings common to both levels, to reduce complexity of the new requirements and to improve their consistency (for example in the envisaged 66.A.30 (a) 8. it is not clear which are "the corresponding ratings" since in the current NPA the ratings for the two levels are different)

Comment 2

ENAC believes that it would be more appropriate to introduce a conversion

	process also for new AMLs categories (B3 and/or ELA) that are applicable to aircraft not addressed by basic Part 66 categories (like gliders, balloons, airships). This change to NPA will better address protected rights of individuals. Moreover also current national licence holders for small general aviation aircraft, that are not valid in Part 145 AMOs) could be better addressed by converting their current licences into limited ELA category than in limited cat. B1.2 category. Anyway ENAC understanding is that since current NPA does not introduce any change in current 66.A.70 and 66.B.300 requirements they shall be applicable also to new categories (B3 and/or ELA) AMLs
response	*Partially accepted* 1. The concept of better regulation for general aviation proposed under Advance-NPA 14-2006 (task MDM.032) contained a preferred option that proposed inter alia to create a new level of license for maintenance personnel in charge with general aviation aircraft (a 'light' Part-66 license) where the B1.2 license was considered too heavy for light aircraft. A first review of comments received further to publication of the advance-NPA indicates strong support for this option. This licence was called "category B3", and has been created because of the lack of B1.2 personnel for General Aviation. The basic knowledge requirements for the B3 licence is much lower than the one for the B1.2 licence because is adapted to the complexity of this light non-pressurised aeroplanes. Certainly, an operator should carefully evaluate the consequences of moving above 2000 Kg. 2. The intent of the licence category ELA, now called L, was to include the very small end of the family of aircraft not excluded by Annex II, which are sailplanes, motor-powered sailplanes and aeroplanes of less than 1000Kg, all balloons, and all airships except a small category. The intent was not to include the ELA2 category but to keep adapted to an equivalent of the Light Sport Aircraft system. Please note that the ELA2 category contains aeroplanes up to 2000 Kg for which a B3 or B1.2 licence is required. 3. The rotorcraft has been excluded from L and B3 categories because of the complexity of typical rotorcraft systems. This is fully supported by helicopters manufacturers. 4. The L licence is made of modules due to the need of having it adapted to the particular need of each applicant (wooden sailplane only, composite sailplane only, hot air balloon only...). The person requiring an L licence for sailplanes may not be interested in learning the modules related to balloons or airships. This leads to the separation in modules as shown. The ratings for the L licence have been reworded to clarify the content. These ratings are adapted to the different categories of aircraft within the group of ELA aircraft defined in the scope. In this CRD the ELA licence is newly called the "L" licence. Comment 2 accepted: Conversion of certifying staff qualifications valid in a Member State prior to entry into force of this Part can be converted i.a.w 66.A.70. In the case of sailplanes, balloons and most airships we propose to introduce in Article 7 of 2042/2003 a provision for a transition period after the adoption of

the amendment to the rule where the national qualifications are still valid.

comment *68* comment by: *FAA*

The Federal Aviation Administration has reviewed NPA No. 2008-03 and has no comments.

response *Noted*

comment *73* comment by: *Federal Office of Civil Aviation (FOCA), Switzerland*

General Comment from FOCA, NAA Switzerland

Out of our history, we did have a mechanics-, an avionics- and an inspector's license. Everybody who wished to apply for such a license needed an apprenticeship (duration 4 years) in a defined technical trade, for the category sought. After passing the theoretical and practical basic training exams, the Basic M-License was issued. This license enabled Mechanics to maintain aeroplanes in metal construction with single or multiple piston engines, up to 5700kg MTOM.

Avionics specialists where able to maintain electrical installations, COM/NAV/Puls systems, instrument systems, autopilot and flight guidance systems, long range nav. systems and EFIS systems or a combination of them. There was no distinction between airplanes and helicopter. They where licensed according to the respective product line they had been trained to.

With implementing the Part-66 license system, we faced the challenge to streamline our license system to the part-66 specifications with the Categories A, B1, B2 and C Licenses.

Bearing in mind the difficulty we had to make the Industry understand the Part-66 License System, we sense that the envisaged changes of the NPA 2008-03 will lead to a situation that becomes uncontrollable and furthermore does not clean up our current difficulties such as the following.

- Switzerland does have approximately 780 aircraft in the Annex II which obliges us to keep up our national license system for this group of aircraft.
- Switzerland has no Part-147 basic training school that provides training for the B 1.2, B1.3 or B1.4 category.

Furthermore we have the following comments to make.

- The envisaged changes for pilot owner maintenance question the necessity of less qualified licensed engineers as already in place, since the pilots will be able to maintain an aircraft almost completely.
- If EASA intended to make changes to the existing Part-66 training syllabus and type rating list, we would have expected to amend the CAT A2 syllabi to create a light Mechanic version for aircraft of simple design, sailplanes and motor powered sailplanes.
- It is our opinion, that the maintenance and licensing for Balloons and

Airships should remain national.
- The creation of ELA licenses with a completely different syllabus using the part-66 terminology could be called an unsafe act.
- An ELA license holder can not extend his license to a category A or B. If this person wishes to do so, he has to start from scratch.
- It has to be point out that all the aircrafts that we are talking about are flying in the same airspace.
- Authorities have invested a fair amount of money to create software tools that enable them to issue part-66 licenses. The changing of the license layout consequently leads to an all new software tool.

Finally, we can conclude, that it could be argued whether or not it is necessary to have any additional license category at all.

response *Not accepted*

1. In the pilot-owner maintenance process, a person certifying tasks under pilot-owner may certify some maintenance tasks as defined by M.A.803 only on the aircraft that he owns. This must not be confused with a Part-66 process where the licence holder may release any aircraft type endorsed on his licence.

2. Regarding the proposal to make a CAT A2 syllabi adapted to a light Mechanic version for aircraft of simple design, sailplanes and motor powered sailplanes, the proposal cannot be retained as category A privileges are related to tasks only, and are not linked to aircraft types endorsed on the licence.

3. It was the intent of Basic Regulation EC 216/2008 to include all aircraft within the EC regulation 2042/2008 except those in Annex II. The ELA (L) licence will give the possibility to exercise the privilege on balloons and airships in all EU Member States in a harmonised way, but during a transition period of 3 years after entry into force of the amended Part-66, the national rules remain in force.

4. The terminology used in the syllabus of the ELA licence is adapted to the category of aircraft it intends to cover: sailplanes, aeroplanes of less than 1000 Kg MTOM, balloons and airships. A separate syllabus as the Appendix VII with a different wording to describe the basic requirements does not entail that the level of safety is lower.

5. It is right that there is no link between the Appendix I and Appendix VII. It was not initially the intention of the Agency to have a bridge between the L licence and the categories A or B1 licence. An L licence holder wishing to gain a B3 licence will need to demonstrate his knowledge on the syllabus of the corresponding licence. However some credits of examination may be granted on some specific items. This will not be very common as the categories of aircraft are very different. The applicant holding an L licence and wishing to obtain a B3 licence may have the benefit of a credit on examination based on the knowledge that the applicant can demonstrate.

6. The creation of an L licence ensures a proper level of safety.

comment *76* comment by: *SAMA Swiss Aircraft Maintenance Association*

General Considerations
SAMA supports EASA's efforts to create proportional regulations adaped to

	general aviation aircraft, e.g. non complex aircraft not used in commercial air transport. Unfortunately, the method chosen to create adapted regulations by defining alternative procedures to those established for large transport aircraft, and doing it in several 'independent' tasks for different Parts, does not produce an easily understandable and well coordinated proposal. The several resulting NPAs appear to be a patchwork of different approaches and - in the opinion of concerned SAMA memebers and its committee - containing too scattered proposals for regulating airworthiness of the least complex aircraft group. SAMA therefore recommends EASA to suspend the ongoing rulemaking processes, including planned Opinion No 02/2008, and to install a coordination task with a given goal to simplify airworthiness rules for this group or class of aircraft. Obviously, this would not be achievable within the presently planned implementation schedule(s) of Part-M for. From an airworthiness and safety viewpoint, SAMA sees no need to immediately implement Part-M to these aircraft; their airworthiness is at least ensured by existing national regulations, and we have no evidence available about existing safety deficits, less for public risks, requiring urgent regulatory action. The whole ongoing process is about standardisation - which the Swiss aircraft industry strongly supports - but the process shall not be forced for bureaucratic reasons and using scattered solutions which are very likely to be re-revised shortly. In respect to the subject of NPA 2008-03, a proportional and simplified approach could be limited to the creation of a 'B3' licence giving full maintenance certification privileges for non complex, non large aircraft, including sailplanes, ballons, airships etc, as endorsed, and not limited to 2000 Kg MTOM. This licence must also be an appealing and affordable first step into an aircraft maintenance career for young people. It is therefore important that the possibility of upgrading exists. The only additional licence "below B3" - if at all necessary in addition to group pilot owner's maintenance - could then be an authorisation that covers maintenance activities so far performed e.g. under a Club's responsibility or based on a simple authorisation. Such an authorisation would be close to what is proposed as Basic-ELA in the NPA in respect to training/experience requirements and privileges and should be issued by umbrella associations (e.g. national Aero Clubs) to alleviate the NAA's burdens. Obviously, both licences would also have to be endorsable for maintenance of LSA. SAMA is convinced that a simple approach with a single 'non complex', but Part-66 upgradeable licence and the possibility of a 'standardised authorisation' issued under industry/association responsibility would be easier to understand and to handle, attract more interested and able persons towards a qualified maintenance activity. A simpler approach would also make it easier to have adequate formation courses available, a subject which has been raised by several SAMA members. Except for for supporting considerably reduced minimum training durations (App.I to Part-147 and app.VI to Part-66, "Basic ELA"), SAMA does not further comment the individual regulation amendments proposed at this stage.
response	*Noted* The Agency notes that Opinion 02/2008 has already led to the adoption of Regulation EC1056/2008. The concept of better regulation for general aviation proposed under Advance-NPA 14-2006 (task MDM.032) contained a preferred option that proposed inter alia to create a new level of license for maintenance personnel in charge with

general aviation aircraft (a 'light' Part-66 license). A first review of comments received further to publication of the advance-NPA indicates strong support for this option. This licence was called "category B3" and is an answer to your request of having a stepping stone for young people entering the world of aviation.
Further to the proposal of a B3 licence, the Agency agreed that there was an important need for a licence for lighter aircraft, between 1000 Kg and the top limit of ultra-lights. Strong supports were brought by stakeholders on such proposal.

The Agency was aware that coordination is required with the proposal made in the NPA 2007-07 about "Privileges of B1 and B2 licences and type and group ratings and type training", and this was done.
The requirements in 66.A.45(i) for a B3 licence on cases of lack of experience has been simplified in the proposal by removal of the possible limitations on the licence. This should simplify the reading of the requirement.

comment *77* comment by: *British Gliding Association*

British Gliding Association Comments on NPA 2008-03

'LICENCING FOR NON-COMPLEX AIRCRAFT MAINTENANCE ENGINEERS'

The British Gliding Association basically welcomes this initiative and finds the measures therein proportionate to the level of responsibility carried by light aircraft engineers engaged in General/Sport aviation. **BGA's principle concern arises from Explanatory Notes Para 16/17 on correspondence with national rules and implementation requirements.**

Explanatory Note 16 – 'Conversion provisions from to B3 licence are not therefore needed.' and **Explanatory Note 17** - '...Provisions have been introduced...only requiring the corresponding examination'.

As declared in Exp Note15, the new B3 licence will specifically cover sailplanes and motor-sailplanes for the first time. Therefore the statement (EN 16) that *'the B3 licence envisaged by the NPA is not to address the case of staff currently involved in piston engines aeroplanes but to facilitate the introduction of newcomers to the industry'*, does not the case of the BGA where we have been active and approved for sailplane maintenance for over 40 years. To continue by stating that '*Conversion provisions to B3 licence are therefore not needed',* neglects the on-going needs of the sailplane and motor-sailplane sectors. Similarly in EN 17: '*ELA licence: no provisions for conversion of national qualifications were introduced because:...'*. Three reasons are given, all of which are invalid, as (1) the NAA will still need to implement oversee examinations at prohibitive time and cost. Further for (2) and (3) any training period is unacceptable, however short, for someone already accredited and currently practising within his remit. The only real justification given for this examination is on the grounds that this is a 'new to EASA' licence. These statement disregard the fact that thousands of aircraft exist, and need to continue to enjoyed the safe, specialist attention within of a competent engineer force that already exists in the nations.

The combined statements in these two 'explanatory notes' completely disregard the ongoing needs of existing engineers which we had expected be be enshrined in a **'Grandfather Rights'** clause. It is our understanding that

these Explanatory Notes were introduced subsequent to its final meeting 66.022 study group, and introduced directly by EASA without discussion. We believe this intent is contrary to EU Basic Regulation, which stipulates the need to recognise existing provisions and privilages within new regulation. In our view this action was uni-lateral, and an unacceptable interjection, by EASA alone. We are led to understand this position is shared with by NAA (CAA UK)

In UK and, we suspect several other nations, sailplanes have been maintained within national associations to a standard already acceptable to their own NAA. Further the BGA UK system (as a whole) was investigated and substantiated to hold an equivalent level of safety to other nations by the EASA Airworthiness Review Team visit of January 2007. Our substantial engineer force, whose standards are accepted by CAA and EASA will be heavily burdened by re-qualification requirements, only in order to secure privileges to which they are already entitled. Far from encouraging and expanding the workforce of engineers, as is as your declared aim, our expert base will be decimated. We also find is inconsistent that engineers in other catagories should be given equivalence while our engineers, experienced in the field of light/sport aircraft, should be required to re-qualify.

We feel strongly that the whole issue of compatibility of existing accreditations should be given wider and deeper consideration. We would be pleased to be involved in any discussion on the implementation of 'Grandfather Right' for licensed engineers for these classes of aircraft. Whether this should be provisioned through the B3 and/or ELA catagories remains for discussion.

response *Accepted*

Conversion of certifying staff qualifications valid in a Member State prior to entry into force of this Part can be converted i.a.w 66.A.70.
In the case of sailplanes, balloons and most airships we propose to introduce in Article 7 of 2042/2003 a provision for a transition period after the adoption of the amendment to the rule where the national qualifications are still valid.

comment *81* comment by: *British Gliding Association*

Consideration might be given to the classification of a Light Aircraft Avionic endorsement or qualification.

response *Partially accepted*

The L privilege includes the work on avionics systems requiring simple test.
The Rulemaking programme includes a task (66.027) to study a licence for avionics engineers in general aviation.

comment *82* comment by: *Luftfahrt-Bundesamt*

The Luftfahrt-Bundesamt (LBA) herewith provides a general comment on NPA 3-2008.

The LBA does not support the introduction of the NPA text as proposed. An enforcement of the proposed revised rule would put some additional workload on the national Authorities, with no significant increase in safety. An enforcement would mean that the LBA would have to issue a considerable amount of new licenses, and the holders need appropriate supervision too. In our view, the definition of the new envisaged ELA License needs some revision

as it does not properly fit in the current regulatory system. Thus, regarding the technical aspects of the NPA, it seems to us that the other affected current requirements have not been adjusted properly.
As far as the safety related side of the NPA is concerned, we feel that i.e. the introduction of the new License Category B 3 allows maintenance staff with less training to perform nearly the same tasks, resulting in requiring nearly the same privileges as certifying staff with higher category levels. We do not see any reason for this relief. The proposed RIA does not mirror this discrepancy to a satisfactory level.
The following needs to be taken into account:

- *The fact that European States have Annex II aircraft on their register which obliges these States to keep up their national license systems for this group of aircraft.*
- *The envisaged changes for pilot owner maintenance question the necessity of less qualified licensed engineers as already in place, since the pilots will be able to maintain an aircraft almost completely.*
- *The creation of ELA licenses with a completely different syllabus using the part-66 terminology does not seem to be reasonable. We think it is absolutely necessary to adapt the same syllabus and terminology for the ELA-category license as for the other licenses, so that qualifications remain comparable and administrative issues are easier to handle.*
- *If EASA prefers to keep the ELA-license as an isolated license, there should be a separate license document for the ELA category to make the isolated solution evident and the layout of the license document for the regular license less voluminous and comprehensive.*
- *We would like to see a general statement in the regulation if and how existing national licenses can be transferred to ELA category licenses.*
- *Finally, we can conclude, that it could be argued whether it is necessary to have any additional license category at all.*

Taking account of the above, we therefore propose to review the NPA again, possibly by re-establishing the corresponding drafting group. The LBA herewith offers to participate in this work.

response

Partially accepted

The proposal made with this NPA corresponds to the conclusions of working group MDM.032 putting evidence that there is a real need for additional licences in the categories of "light aircraft", as demonstrated in the NPA. The B1.2 licence requires a too high Basic Knowledge requirements for these aircraft, it was necessary to re-adapt the requirement for a category of light aircraft. It was not in the TOR to adapt the B1.2 basic knowledge requirements as a general concept for all aircraft.
It is the opinion of the Agency that, further to the reduction of the basic knowledge requirement for the B3 licence, there is no reduction of safety level.

The Agency reminds that pilot owner maintenance is valid for the aircraft that the pilot owns.

The terminology of basic requirements for the L licence is different than the one for the B3 or B1 licence because the categories of aircraft are very different, and there is not really a bridge towards the B3 licence. Some credits of examinations from the L towards the B3 licence may be ensured however on some items.

The L licence document (form 26B) has been separated from the form 26A of

current categories A, B and C licences.

A conversion process is possible from national licences towards the B3 and L licence in conformity with 66.A.70.

At the time of the Review groups, the ELA licence has been renamed an "L" licence to avoid confusion with categories of aircraft within the ELA process.

As required, the L licence has been separated from the other licences because of the difference within the Ratings of the category L.

comment *83* comment by: *The Norwegian Air Sports Federation*

In Norway we need a gradfathering for the holders of Norwegian sailplanes maintenance licence, this licence are now under national rules.
This licence holders have a writen test and documentet practice, and the licence are issued by Civil Aviation Authority Norway.
After the transition periode this holders should have a full-ELA.

response *Accepted*

Conversion of certifying staff qualifications valid in a Member State prior to entry into force of this Part can be converted i.a.w 66.A.70.
In the case of sailplanes, balloons and most airships we propose to introduce in Article 7 of 2042/2003 a provision for a transition period after the adoption of the amendment to the rule where the national qualifications are still valid

comment *88* comment by: *uk laa*

In general, we applaud the proposal to create an 'easier' entrance level qualification that is more in tune with the needs of general aviation maintenance. We think it important that a light aircraft maintenance qualification should be recognisable in its own right as a professional qualification, and one which can promote the opportunity for a long and prosperous career in the light aviation industry for keen engineers, whilst at the same time help to avoid burdonsome and disproportionate regulations and costs for owners and operators. It is however important that recognition be given to existing 'licencing' systems that have already been proven to work and the transition for engineers from one system to another should be made as pain free as possible, and kept at minimum cost.

response *Accepted*

Conversion of certifying staff qualifications valid in a Member State prior to entry into force of this Part can be converted, i.e. 66.A.70.
In the case of sailplanes, balloons and most airships we propose to introduce in Article 7 of 2042/2003 a provision for a transition period after the adoption of the amendment to the rule where the national qualifications are still valid

comment *89* comment by: *Bill Taylor*

I wish to congratulate EASA for developing the principles behind this NPA which I believe meet an important need. The introduction of ELA and B3 licences add important new 'entry level' qualifications which might encourage more young people to start a career in aviation maintenance. They should also provide a valid qualification for the many people who maintain aeroplanes of all

types in a club and private operator environment and who have no desire to operate in an airline or commercial air transport environment. Moreover, the new licences should do much to help improve standards of maintenance and continued airworthiness as more people attain these new 'lighter touch' qualifications.

If these benefits are to be achieved it will be vital for EASA to resist any pressure which might be brought to bear from the vested interests, especially those representing the licenced aircraft engineers. Whilst the views of this sector are very important we must not loose sight of the fact that these qualifications are licences in their own right and that those people who attain these qualifications have rightly and properly become licenced engineers themselves. This development should be seen as strengthening the profession of aircraft engineering and EASA must therefore ensure that any pressure from the 'heavy end' is resisted.

response *Noted*

comment *93* comment by: *John Tempest*

The creation of a simplified aircraft maintenance engineer's licence for ELA-1 and ELA-2 is very welcome, and I strongly support this initiative.

response *Noted*

comment *102* comment by: *UK CAA*

As a general remark, the NPA is introducing further complications into a system that is currently safe and will result in the loss of yet more young people out of our industry

response *Noted*

However the opinion of the Agency and many commentors to this NPA is that this should help young people gaining job opportunity and qualification.

comment *116* comment by: *Swedish Transport Agency, Civil Aviation Department (Transportstyrelsen, Luftfartsavdelningen)*

The cost and increased work load for the maintenance organisations, training organisations and authorities does not motivate the adding of more licence categories such as B3 and several ELA-categories.

The Swedish CAA belive that the existing category B1.2 is sufficient to cover what a B3 licence holder is permitted to do. This is emphasized by the suggestion that a B1.2 licence covers everything in the scope for a B3 licence. We believe that it is sufficient with one licence category (B1.2) for the maintenance of piston powered aeroplanes.

We also believe that the great variety of ELA ratings complicate the system far to much. The ELA licences should be reduced to less variants.

response *Not accepted*

The purpose of this NPA was to propose a maintenance licence which requires

a lighter programme of knowledge than the B1.2 licence, which would be more adapted to the category of light aircraft. The result is that it adds a new entry level qualification which might encourage more young mechanics to work in the field of general aviation. Feedback received by the Agency from stakeholders showed that the level of basic knowledge as required by the B1.2 level was too high compared to the categories of light aircraft below 2T max take-off mass. In addition it creates a possibility for people currently working on these aircraft today in air-clubs, to be granted a European licence to work without the necessity of meeting unnecessary standards. It ensures in the same time a standardized level of safety in the maintenance and might improve the standards of maintenance.

The economical impact assessment did not show that the maintenance organisations and training organisations would have to bear more costs. On the contrary, it showed that the training organisations might have the benefit of more business.

It mentioned also that by employing or using personnel holding B3 or L licences, the cost of maintenance would be reduced which would lead to lower costs of flying hours.

comment *158* comment by: *Graham HALLETT*

The major complaint that balloonists will continue to have is that this is yet more regulation that we don't need and which is completely inappropriate for our type of aircraft. This introduces unnecessary training and examinations to look after an aircraft that is incredibly simple - much more so than microlight aircraft for example, which have engines, propellers and fatal accidents, but have been completely excluded from the basic regulations.

response *Accepted*

Conversion of certifying staff qualifications valid in a Member State prior to entry into force of this Part can be converted i.a.w 66.A.70.
In the case of sailplanes, balloons and most airships we propose to introduce in Article 7 of 2042/2003 a provision for a transition period after the adoption of the amendment to the rule where the national qualifications are still valid.
In addition, the qualification requirements are fairly simple and appropriate to the lower complexity of balloons.

comment *174* comment by: *DGAC France*

The references (see affected paragraph) are those of EC 2042/2003. Due to the NPA changes, there are **OTHER** paragraphes in the EC 2042/2003 (forgotten in the NPA) that are affected by the changes (cross references). Our comments propose to add those changes in the CRD. So the modified text is not directly in the NPA text but from the EC 2042 text that we believe was forgotten to be updated.

2. PROPOSED TEXT/ COMMENT:

66.B.405
(a) For each technical qualification concerned the report shall identify the subject matter and knowledge levels contained in the applicable Appendix I **or VI** to this Part relevant to the particular category being compared.
...
(c) Based upon paragraph (b) comparison, the report shall indicate for each

technical qualification concerned the Appendix I **or VI** subject matters subject to examination credits.

3. JUSTIFICATION:

Due to the creation of the ELA training syllabus in the new Appendix 6 of Part-66, the competent authority should refer to this Appendix for an ELA examination credit report.

response *Accepted*

comment *175* comment by: *DGAC France*

The references (see affected paragraph) are those of EC 2042/2003. Due to the NPA changes, there are **OTHER** paragraphs in the EC 2042/2003 (forgotten in the NPA) that are affected by the changes (cross references). Our comments propose to add those changes in the CRD. So the modified text is not directly in the NPA text but from the EC 2042 text that we believe was forgotten to be updated.

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3. JUSTIFICATION:

Due to the creation of the ELA training syllabus in the new Appendix 6 of Part-66, the competent authority should refer to this Appendix for an ELA examination credit report.

response *Accepted*

comment *176* comment by: *DGAC France*

The references (see affected paragraph) are those of EC 2042/2003. Due to the NPA changes, there are **OTHER** paragraphs in the EC 2042/2003 (forgotten in the NPA) that are affected by the changes (cross references). Our comments propose to add those changes in the CRD. So the modified text is not directly in the NPA text but from the EC 2042 text that we believe was forgotten to be updated.

2. PROPOSED TEXT/ COMMENT:

3. The reason for allowing the subcontracting of **only** training modules 1 to 6 and 8 to 10 **of Appendix I of Part 66 and training modules 1 to 3 of Appendix VI of the Part 66** ~~only~~ is~~,~~(strikeout comma) **that** most of the

related subjects can generally also be taught by training organisations not specialised in aircraft maintenance and the practical training element as specified in 147.A.200 does not apply to them.

3. JUSTIFICATION:

Since maintenance training organisations may already sub-contract the training courses in appendix I which are not specific to aircraft maintenance, they should be allowed to do the same thing for the corresponding training courses in the new appendix VI.

response *Accepted*

comment *177* comment by: *DGAC France*

The references (see affected paragraph) are those of EC 2042/2003. Due to the NPA changes, there are **OTHER** paragraphs in the EC 2042/2003 (forgotten in the NPA) that are affected by the changes (cross references). Our comments propose to add those changes in the CRD. So the modified text is not directly in the NPA text but from the EC 2042 text that we believe was forgotten to be updated.

2. PROPOSED TEXT/ COMMENT:

66.B.100 Procedure for the issue of an aircraft maintenance licence by the competent authority
...
(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 applicable Appendix **I or VI** have been met as required by this Part.

3. JUSTIFICATION:

Due to the creation of the ELA training syllabus in the new Appendix 6 of Part-66, the competent authority should refer to this requirement for an ELA applicant.

response *Accepted*

resulting text See the resulting text in the Appendix A.

TITLE PAGE p. 1

comment *14* comment by: *CAA-NL*

The general comment to this NPA (**in conjunction with NPA 2007-07**) is that it is becoming much too complex. It is by far better to have a simple system that is adhered to, than a sophisticated system that very few people understand. It will be more effective for safety at lower cost!

This applies to the intangible 'licencing system' as well as to the proposed text: one philosophy should be followed for all different categories and ratings.

Many proposals deviate from the existing system or are not defined enough.

The field is divided in too many different ways:

- complex-non complex
- weight
- limitations related to systems or structure
- discipline Avionic/Mechanical
- aeroplane/helicopter/sailplane/powered sailplane/airship/balloon
- turbine/piston
- type ratings
- group ratings
- basic ratings
- categories in too many, too different series: A-B-C, A1-2-3-4, B1-B2, B3, full ELA-Basic ELA, ELA-1 and ELA 2,

This creates a ten-dimensional licence without a clear philosophy behind it!

response *Partially accepted*

The intention of the Agency was to better proportionate the requirements for the different licences to adapt these to the categories of aircraft. See justification in answer to comments 82 from LBA and 116 to SCAA.

However, in answer to your query about complexity, the agency has modified the proposal by:
- renaming the ELA licence to read an "L" licence to avoid confusion of aircraft with ELA process with aircraft in L (ELA) licence,
- simplifying considerably the limitations in the B3 and L licences,
- renaming the "basic ratings" of licence L to read "ratings".

A. Explanatory Note - I. General p. 3

comment *54* comment by: *Aircraft Engineers International (AEI)*

Page 3 of 106 **A. EXPLANATORY NOTE**
§ I General,
sub § 4. This rulemaking activity is included in the Agency's Rulemaking Programme for 2008. It implements the following rulemaking task:

- 66-022 Maintenance Engineers Licences for non-complex aircraft ~~maintenance engineers.~~

Reason: Grammatical correction

response *Noted*

We understand the point, but because the title must remain unchanged during the rulemaking process, this requires amending the TOR, the NPA and the CRD, and we are at the stage of the CRD.

comment	*95* comment by: *Aero-Club of Switzerland* The Aero-Club of Switzerland greatly welcomes and supports the idea of a proportional regulation for the jobs to be executed on non complex aircraft not used in commercial air transport. We feel, however, that a top-down process was chosen to reach this goal. We think, a bottom-up process (from the lighter to the heavier machines) would have been better. Justification: In doing so, a really appealing licence, tailored to the measures of the young we want to attract could have been established, leaving by the side all constraints of today's framework. The Aero-Club of Switerzland is convinced, that a simple approach with one single licence, Part-66 upgradable, would be the most appropriate solution. Justification: This would be more easily understood, easier to handle and, because of its simplicity, attract even more people to attend the necessary training/formation. Furthermore, higher grades of formation could easily be envisaged. It seems to us that the main issue of this NPA is the required proof of experience in areas where this need did not exist up to now. We therefore ask the Ageny to insist on adequately long transition periods where neccessary. Furthermore we ask the Agency to do everything to be able to react quickly on the emergence of new materials. We consider technology to be moving faster than bureaucracy.
response	*Noted* Feedback received by the Agency on this NPA seem to indicate that the proposal is welcomed, as it proposes a stepping stone to the B1.2 licence for young people wishing to work on aircraft in the category of light aircraft with easy access to the L licence and without the burden of complex requirements on basic knowledge on the B1.2 licence. In addition, in the case of sailplanes, balloons and most airships we propose to introduce in Article 7 of 2042/2003 a provision for a transition period after the adoption of the amendment to the rule where the national qualifications are still valid

A. Explanatory Note - III. Comment response document p. 4

comment	*132* comment by: *ECOGAS*
response	*Noted* This might be a CRT tool mishap.

A. Explanatory Note - IV. Content of the draft rules p. 4

comment	*133* comment by: *ECOGAS*

	ECOGAS welcomes the proposed creation of a simplified B1 licence to resolve the difficulties of over-regulation and inappropriate syllabus for General Aviation (GA) aircraft. This proposal is an important step foward in preserving the necessary skill base for General Aviation.
response	*Noted*

resulting text	See the resulting text in the Appendix A.

A. Explanatory Note - IV. Content of the draft rules - Background information p. 4-7

comment	*3* comment by: *AVAG, Eugenio Lanza di Casalanza* A category A.M.L. can be used only in Part 145 organization, this will lead to a loss of certified persons that actually operates on national rules in small organization that will became certificated in Part M. We suggest to give to these persons the possibiliy to convert these licenses into B1 light or permit to the utilization of A licences also to Part M organizations. On Part M organization only B1 licences are permitted. What about the privileges of C licences? Actually we are working on aircraft below 2530 Kg under national rulements, and we are approved for Line and base maintenance, enclosed structural repairs, and since we are a small organization we'll became certified under Part M/F/G, this will mean we will loose our privileges or these will be mantained under B1 licences? This is not clear.
response	*Noted* Provisions for a transition from national qualifications into B3 and ELA licence are added. The personnel holding a category C licence may work in Part-145 organisations approved for non-large aircraft, this is mentioned in 145.A.30(h)2. The Agency notes that category C certifying staff is only applicable for Base Maintenance for the release of a full aircraft once B1 and B2 support staff have ensured the proper performance of the tasks. This category does not exists in Part-M Subpart F maintenance organisations. The regulation 1056/2008 amends Part-M to allow the enter into force in September 2009 for aircraft non involved in commercial air transport. This was to give time for national organisation to be granted a subpart-F approval once these subpart requirements are met. Conversion of certifying staff qualifications valid in a Member State prior to entry into force of this Part can be converted i.a.w 66.A.70. In the case of sailplanes, balloons and most airships we propose to introduce in Article 7 of 2042/2003 a provision for a transition period after the adoption of the amendment to the rule where the national qualifications are still valid

comment	*19* comment by: *Dutch gliding association* It is totally unacceptable for the Dutch Gliding Association that there are no provisions for conversion of national qualification. The Dutch Gliding Association will loose a lot of Glider Certifying Staff, because they will refuse to do exam again. It is also in contradiction with the Part 66.A.70. According Part 66.A.70 a certification staff qualification valid in a Member state, prior of entry into force of Part 66 shall be issued an aircraft maintenance licence without further examination subjected to the condition specified in 66.B.300. Frank Beemster Dutch Gliding Association
response	*Accepted* Conversion of certifying staff qualifications valid in a Member State prior to entry into force of this Part can be converted i.a.w 66.A.70. In the case of sailplanes, balloons and most airships we propose to introduce in Article 7 of 2042/2003 a provision for a transition period after the adoption of the amendment to the rule where the national qualifications are still valid.

comment	*53* comment by: *Axel Ockelmann + Manfred Poggensee Commercial Balloon Operators Germany* concerning balloons all sounds reasonable but the idea of non conversion of a national licence (background information No. 17) stands in contrary to 66.A.70a) where the right of conversion (grand father right) is written.
response	*Accepted* Conversion of certifying staff qualifications valid in a Member State prior to entry into force of this Part can be converted i.a.w 66.A.70. In the case of sailplanes, balloons and most airships we propose to introduce in Article 7 of 2042/2003 a provision for a transition period after the adoption of the amendment to the rule where the national qualifications are still valid

comment	*55* comment by: *Aircraft Engineers International (AEI)* Page 5 of 106 **A. EXPLANATORY NOTE § IV Content of the draft opinion and the draft decision** **A) Background information**, sub § 13. During its draft, the group focused its work on licences covering airframe, powerplant and electrical systems plus some limited avionics privileges. The equivalent of a B2 licence adapted to the General Aviation was not considered by the group, as explained in the Regulatory Impact Assessment in Attachment 1, and the industry, represented by the SSCC committee, ~~may~~ will need to consider this issue. **Reason:** The present B2 licence knowledge level is too high for the aircraft proposed to be regulated by this NPA, resulting in difficulties to attract and then keep B2 personnel in this sector of aviation. Therefore it is of the utmost importance that a B4 licence level is created for this purpose. (See also page

	100 of 106 **C. ATTACHMENTS, I. Regulatory Impact Assessment, Part-66 subgroup to M.017, 2.Options,** **Option b.3 a licence to certify maintenance tasks on avionics on light aircraft would be created:**)
response	*Accepted* The issuance of a licence for avionics engineer more adapted to general aviation has been considered by the Agency. The task 66.027 starts in 2010.

comment	*56* comment by: *Aircraft Engineers International (AEI)* Page 6 of 106 **A. EXPLANATORY NOTE § IV Content of the draft opinion and the draft decision** **A) Background information**, sub § 15. • **ELA licence:** applicable to the following: o Sailplanes, powered sailplanes and aeroplanes below 1000 Kg MTOM, not classified as "complex motor-powered aircraft" **Question/Opinion:** Where will the definition be found to describe what aircraft types meet "complex motor powered aircraft"? Who decides what is considered "complex". It should be EASA rather than NAA's. It must be quite specific as to what aircraft type meets the complex criteria and will not be covered by an ELA license.
response	*Noted* The definition of "complex motor-powered aircraft" is provided in the Basic Regulation EC216/2008. Nevertheless, the reference to "complex motor-powered aircraft" has been removed from the applicability of the L-licence.

comment	*57* comment by: *Aircraft Engineers International (AEI)* Page 6 of 106 **A. EXPLANATORY NOTE § IV Content of the draft opinion and the draft decision** **A) Background information**, sub § 16. **Question/Opinion:** The conversion from a national qualification to a B1.2 Part 66 licence. "Appropriate limitations". Will these limitations be spelled out by EASA or the NAA? E.A.S.A should do this as the limitations should be standardized if the B1.2 license is to be a cross border document.
response	*Not accepted* It is the responsibility of the NAAs to endorse limitations on the licences following the corresponding conversion report. Nevertheless, EASA Standardisation checks the appropriate application of the regulation by NAAs.

comment	*69* comment by: *Ian HEY* Paragraph 16 states that conversion provisions to the B3 licence are not needed.

Paragraph 17 states that no conversion provisions to the ELA licence are necessary, and uses as a justification for this the simple requirements for the grant of an ELA licence.

However this ignores people with national licences who have significant experience of maintenance of light aircraft, for example glider and motor glider inspectors in the UK, who hold authorisations issued by the British Gliding Association (BGA). It is possible that these BGA authorisations will be deemed equivalent to B3 licence or the ELA licence and they should therefore have the opportunity to be given credit for their existing licence and experience to facilitate the award of a B3 licence or an ELA licence. Therefore conversion provisions for the B3 licence and ELA licence are required.

Not to provide conversion provisions for these two licences would prevent people currently exercising licence privileges under national rules from exercising licence privileges under Part M without undergoing training and examinations, which is unreasonable and will deprive some of them of the means to earn a living.

response *Accepted*

Conversion of certifying staff qualifications valid in a Member State prior to entry into force of this Part can be converted i.a.w 66.A.70.
In the case of sailplanes, balloons and most airships we propose to introduce in Article 7 of 2042/2003 a provision for a transition period after the adoption of the amendment to the rule where the national qualifications are still valid.

comment *86* comment by: *uk laa*

Explanatory Note IV paragraphs 16 & 17 state that no credit will be given to pre-existing national qualifications. This seems unfair, inappropriate and discriminatory. In the particular case of UK gliders, balloons and, to a degree, amatuer built aircraft, national qualifications have been the only option available in the past. A direct conversion to equivalent EASA qualification should be available without the need for examination.

response *Accepted*

Conversion of certifying staff qualifications valid in a Member State prior to entry into force of this Part can be converted i.a.w 66.A.70.
In the case of sailplanes, balloons and most airships we propose to introduce in Article 7 of 2042/2003 a provision for a transition period after the adoption of the amendment to the rule where the national qualifications are still valid.

comment *97* comment by: *CAA-NL*

1. With respect to the Aircraft Maintenance licences, there are four different kind of aircraft:

- Large or complex aircraft
- Medium light and simple aircraft
- Light and simple aircraft (ELA-2)
- Very light and simple aircraft (ELA-1).

To avoid ambiguity, EASA should indicate for every type or group rating, which kind of aircraft it covers. One kind of aircraft should be covered only once. By consequence automatically included category should be printed on the AML.

The holder of a B1.2 shall have A2 and B3 printed on his AML as well. Furthermore Category A, B2 and C could also be used on light and very light aircraft.

	Line maintenance mechanic	Line maintenance technician		Base maintenance engineer
Cessna 550/560 (PWC 530/535)	A1	B1.1	B2	C
Cessna 310 Series (Continental)	A2	B1.2	B2	C
Cessna 182 Series (Lycoming)	***A2***	B3	***B2***	***C***
Cessna 172 Series (Continental)	***A1/2/3/4***	simple ELA / Full ELA	***B2***	***C***

response *Partially accepted*

The issue presented here has been discussed during the review groups and the Agency agrees with the conclusion of the group that:
- it has been proposed to remove partially the limitations.
- for the B3 licence there are no ratings on the licence, only a general group rating for piston engine aeroplanes below 2T non pressurised,
- if such a table was adopted, the list would not be accurate and updated.

comment *103* comment by: *UK CAA*

Comment
The lack of provision of conversion of national qualification should be reconsidered and an option allowed for a conversion report.

Justification
Personnel who have been certifying for an extended period of time should have those qualifications recognised as protected rights and should not be required to "re-qualify " by examination.

Proposed text
Amend 66.A.25(c) to add new sentence,
" Where a conversion report has been generated and accepted by a competent authority or accreditation conducted in accordance with 66.B.400 and 66.B.405, then an applicant may be exempt from the examination in accordance with Appendices VI and VII to this Part."

response *Partially accepted*

Conversion of certifying staff qualifications valid in a Member State prior to entry into force of this Part can be converted i.a.w 66.A.70. There is no need to add additional text.
In the case of sailplanes, balloons and most airships we propose to introduce in Article 7 of 2042/2003 a provision for a transition period after the adoption of the amendment to the rule where the national qualifications are still valid.

comment 119 comment by: *Walter Gessky*

Item 17 on page 6

General (NPA Explanatory Note number 17):
The concept doesn't contain any provision for the conversion of a national ELA license. This is not acceptable because a national licence issued based on equivalent procedures can't be converted into an ELA licence. When MS with an adequate licence system for ELA are willing to establish a conversion report, than this option should be available, provided the national system for issuance of a licence includes adequate provisions with regard to qualification, training and examination of the person.
Even when the training is short or persons with 2 year experience do not require training, this is a remarkable disadvantage for holder of a national licences which is valid today and grant certain privileges. (e.g. license motorgliders, ballons and sailplanes)

response *Accepted*

Conversion of certifying staff qualifications valid in a Member State prior to entry into force of this Part can be converted i.a.w 66.A.70.
In the case of sailplanes, balloons and most airships we propose to introduce in Article 7 of 2042/2003 a provision for a transition period after the adoption of the amendment to the rule where the national qualifications are still valid.

comment 120 comment by: *Walter Gessky*

NPA page 6, # 15, Part-66/Details of changes ():
B3 licence definition
As the Category B3 is scheduled to be a „group rating", an appropriate scope of different manufacturers/construction technologies compared with an appropriate period of "On the Job Training" shall be determined.
A Minimum-Requirement has to be defined.

response *Not accepted*

AMC 66.A.45(i) already includes experience requirements demonstrated by records. This AMC states that 50% of the tasks in Appendix II to the AMC should be completed (only those relevant to the licence category (B3 licence)) and this should cover an acceptable cross-section of tasks.

comment 134 comment by: *ECOGAS*

Re Paragraph IV A) 13

It is worth noting that the B2 licence examination requirements are even more inappropriate for GA aircraft as they contain a great deal of examination material and questions that are not only NOT used in GA or aircraft below 5,700 Kgs but have no relevance.

Currently, GA functions on "Grandfather" rights. Engineers who were previously in a GA company have now obtained B2 licences in the changeover and continue to carry out their previous functions. Unfortunately many of these engineers are coming up for retirement and their places are not being filled. This is because of the following reasons:

- 1. There are a limited number of schools capable of providing the Part 147 training requirements for a B2 licence.
- 2. Those that are available are costly.
- 3. It takes 3 to 5 years approximately to take the schooling and sit the examinations.
- 4. Once the examinations are passed there is an experience qualifying period before the licence can be used.
- 5. In most cases a part 147 type examination is required.
- 6. This results in a young person having to spend approximately four to five years before he can become an engineer with the ability to sign out maybe one type of aircraft.

There are very few, if any, small GA companies with the resources to be able to support a young person through this protracted system. For the average young person wanting a career in aviation there is only one route and that is to join an airline where they can hope to get training whilst doing OJT and getting some payment at the same time. Already, numbers of B2 engineers are leaving GA for better remunerated positions in the airlines.

For this reason, ECOGAS will shortly be submitting an outline of a modular B2 licence through the SSCC. The new licence would be based on the B2 licence as it is at the present time, but modularised such that an individual working in General Aviation would be allowed to gain certification rights system type by system type. The modules that are currently available could be used, "as is" but broken into reasonable sections. This would allow young people coming into the industry to gradually gain certification rights and experience rather than attempting to accomplish everything at once over a protracted period of time.

response *Noted*

The Agency has introduced a new Rulemaking task (66.027) to adapt the licensing requirements of avionics certifying staff in General Aviation.

comment *136* comment by: *Deutscher Aero Club e.V. (DAeC)*

17. Conversion
Deutscher Aero Club (DAeC) disagrees with the proposal not to implement provisions for the conversion of national qualifications. Actually DAeC urgently requests such provisions.

Justification:

German Concept of Prüfer Klasse 3:

The Prüfer Klasse 3 is implemented in German aviation law, the licence "Prüfer Klasse 3" can be issued by the Luftfahrt-Bundesamt (LBA) only and is based on a theoretical and practical examination by the LBA. This licence is fully ICAO compliant.

The privileges combined with that licence are:

- Scope sailplanes and powered sailplanes

- Release of any maintenance task including annual review of radio
- Rating for avionics
- Rating for 750 kg aeroplanes (VLA)
- Carrying out annual airworthiness reviews

Not to convert such (sate issued) licences without further examination would violate the basic principles of grandfathering (← legal impact)
To reach the same level under the rules proposed in that NPA a Prüfer Klasse 3 would have not to pass the examination only (as mentioned in the explanatory note), but he/she has to have two years experience exercising the Basic-ELA and to pass a one week training including examination for the Full-level as well (refer to 66.A.30 (a) 8.)

Asking our members holding a Prüfer Klasse 3 licences if the would undergo the process to obtain an ELA licence in case of no conversion, 50% of the persons stated that they would stop volunteering in aircraft maintenance. This should be taken in to account in the RIA as a tremendous social impact unless the possibility of conversion is introduced.

As the training and examination syllabus was set up by the authority it is not difficult for the LBA to establish an adequate conversion report.

Solution:
DAeC suggests to enable the provisions of 66.A.70 and 66.B Subpart D for the conversion of ELA-licences.

response *Accepted*

Conversion of certifying staff qualifications valid in a Member State prior to entry into force of this Part can be converted i.a.w 66.A.70.
In the case of sailplanes, balloons and most airships we propose to introduce in Article 7 of 2042/2003 a provision for a transition period after the adoption of the amendment to the rule where the national qualifications are still valid.

comment *137* comment by: *Deutscher Aero Club e.V. (DAeC)*

17. Crediting

For those persons who obtained Aero Club internal training which can actually not easily converted, the crediting provisions of 66.A.25 (b) (Full or partial credit against..) should be kept in any case. The provisions of Section B, Subpart E should also be kept and enabled for ELA-Licences.

Justification:
The DAeC offered its members substantial theoretical and practical maintenance training including examination. These courses had not resulted in an state licence but have been recognized by LBA for realising aircraft slightly above the Pilot-Owner maintenance level. It's reasonable that some of the knowledge obtained should be credited.

response *Accepted*

Credit for basic knowledge requirements and examination can be carried out by the NAAs based on the previous qualifications. 66.A.25(b) (now called 66.A.25(d)) remains valid for B3 and ELA licences.

comment	*138* comment by: *Deutscher Aero Club e.V. (DAeC)* 15. Deutscher Aero Club welcomes the introduction of both the B3 and the ELA licence.
response	*Noted*

comment	*140* comment by: *Chairman Technical Committee British Balloon and Airship Club* Once again little or no understanding of the extremely simple form of flight and maintenance requirements in respect of balloons, and to some extent airships, have been taken into account. In the case of both hot air and gas balloons why are they even being included? How is it that microlights, which these days are almost as sophisticated as light aircraft are completely excluded but something that gets hot and goes up, cold and comes down, and cannot be steered is being treated in the same way as light aircraft? A very basic knowledge of sewing, weaving, knot tying and plumbing is all that is required to repair and maintain balloons. The inspection procedures are equally straightforward and there is no statistical evidence that the current levels of maintenance pose any safety risk. Almost every incident involving balloons (of which there are very few) are a result of pilot error. For many many years now the British Balloon and Airship Club has trained, appointed and audited our inspectors with a 100% safety record through our Exposition with the UK CAA. Our inspectors and the standards they meet are valued throughout the world. We would strongly contend that hot air balloons, gas balloons hot air airships and simple airships should be excluded from the regulation.
response	*Noted* The Agency cannot exclude the balloons and airships from the EC 2042/2003 regulation as the Basic Regulation EC 216/2008 and the Annex II to this regulation define which aircraft have to be considered and which have to be excluded. Balloons and airships do not meet the definition of Annex II aircraft. Great consideration has been put to adapt the proposal here to the lower complexity of balloons and airships. In addition, conversion provisions and a transition period have been introduced for national qualifications.

comment	*141* comment by: *Chairman Technical Committee British Balloon and Airship Club* The excuse, rather than reason, given for not being able to 'grandfather' any existing qualifications, ratings or appointments under existing NAA arrangements as being "too difficult" is simply not acceptable. Every attempt to integrate existing arrangements should be made. The system we, as the BBAC, employ is well proven and could easily be adopted by other member

states with little or no impact. The additional burden put onto all balloon inspectors is out of proportion with the need. Why not leave it in the control of the NAAs?

If the constraint is costs to EASA then admit it and we can lobby the EU for more funding on your behalf.

Chris Dunkley

Chairman Technical Committee
British Balloon and Airship Club

response *Accepted*

Conversion of certifying staff qualifications valid in a Member State prior to entry into force of this Part can be converted i.a.w 66.A.70.
In the case of sailplanes, balloons and most airships we propose to introduce in Article 7 of 2042/2003 a provision for a transition period after the adoption of the amendment to the rule where the national qualifications are still valid.

comment *143* comment by: *Jim Hammerton BGA*

IV a) item 17
by not allowing any conversion previsions from national licences to ELA or B3 will result in many volunteer engineers currently certifying sailplanes and powered sailplanes retiring from the sport. only those in a professional capacity will be inclined to sit an examination to gain B3 or ELA licence. this will induce a reduction is safety by creating a shortage of certifying personnel and drive maintenance underground. it is also a withdrawal of existing privileges.

response *Accepted*

Conversion of certifying staff qualifications valid in a Member State prior to entry into force of this Part can be converted i.a.w 66.A.70.
In the case of sailplanes, balloons and most airships we propose to introduce in Article 7 of 2042/2003 a provision for a transition period after the adoption of the amendment to the rule where the national qualifications are still valid.

comment *147* comment by: *Chairman Technical Committee British Balloon and Airship Club*

This is being entered a separate comment as it is more specific. Although it is accepted that EASA may not think that they able to grandfather a non-existent International Licence it must be true that the various NAAs must have recognised the rating or licencing structures of the various associations, especially if the responsibility of continuing airworthiness was delegated to them as in the case of the British Balloon and Airship Club.

Accordingly we would suggest that if you care to view the background information No. 17 (page 6) of the ELA draft concerning "grandfather rights" you will find that it contradicts Annex III of the EC rule 2042/2003:

§ 66.A.70 Conversion provisions

(a) The holder of a certifying staff qualification valid in a Member State, prior to the date of entry into force of this Part shall be issued an aircraft maintenance licence without further examination subject to the conditions specified in 66.B.300.

66.B.300 General

(a) The competent authority may only perform the conversion specified in 66.A.70 in accordance with a conversion report prepared pursuant to paragraph 66.B.305 or 66.B.310, as applicable.

(b) The conversion report shall be either developed by the competent authority or approved by the competent authority.

66.B.305 Conversion report for national qualifications

The report shall describe the scope of each type of qualification and show to which aircraft maintenance licence it will be converted, which limitation will be added and the Part-66 module/subjects on which examination is needed to ensure conversion to the aircraft maintenance licence without limitation, or to include an additional (sub-) category. The report shall include a copy of the existing regulation defining the licence categories and scopes.

66.B.310 Conversion report for approved maintenance organisations authorisations

For each approved maintenance organisation concerned, the report shall describe the scope of each type of authorisation and show to which aircraft maintenance licence it will be converted, which limitation will be added and the module/subjects on which examination is needed to convert to the licence, or to include an additional (sub-)category. The report shall include a copy of the relevant approved maintenance organisation's procedures for the qualification of certifying staff, on which the conversion process is based.

Chris Dunkley
Chairman Technical Committee
British Balloon and Airship Club

response *Accepted*

Conversion of certifying staff qualifications valid in a Member State prior to entry into force of this Part can be converted i.a.w 66.A.70.
In the case of sailplanes, balloons and most airships we propose to introduce in Article 7 of 2042/2003 a provision for a transition period after the adoption of the amendment to the rule where the national qualifications are still valid.

comment *148* comment by: *Graham HALLETT*

Re para 17:

The BBAC has a long established qualification system in place for certifying staff for balloons which is recognised by our NAA (the UK Civil Aviation Authority). It would not be difficult at all for the CAA to establish an adequate conversion report to allow 'grandfathering' of our staff to the new ELA licence.

	The suggested approach of not allowing a conversion is at odds with the general principle of grandfathering which appears to apply elsewhere in other documents.
response	*Accepted* Conversion of certifying staff qualifications valid in a Member State prior to entry into force of this Part can be converted i.a.w 66.A.70. In the case of sailplanes, balloons and most airships we propose to introduce in Article 7 of 2042/2003 a provision for a transition period after the adoption of the amendment to the rule where the national qualifications are still valid.

comment	*159* comment by: *Deutscher Aero Club* 17. Conversion The European Gliding Union (EGU) disagrees with the proposal not to implement provisions for the conversion of national qualifications. Actually EGU urgently requests such provisions. Justification: In some Member States aero clubs offered its members theoretical and practical maintenance training including examination. Especially in those Member States which currently do not have a state licensing system for this type of certifying staff aero clubs established their own training and examination system. Based on such systems sailplanes and powered sailplanes have been maintained for several decades at an appropriate safety level. EGU believes that it is reasonable to allow competent authorities to decide weather a conversion report can be established or not. Solution: EGU suggests to enable the provisions of 66.A.70 and 66.B Subpart D for the conversion of ELA-licences.
response	*Accepted* Conversion of certifying staff qualifications valid in a Member State prior to entry into force of this Part can be converted i.a.w 66.A.70. In the case of sailplanes, balloons and most airships we propose to introduce in Article 7 of 2042/2003 a provision for a transition period after the adoption of the amendment to the rule where the national qualifications are still valid.

comment	*160* comment by: *Deutscher Aero Club* 17. Crediting For those persons who obtained aero club internal training which can actually not easily converted, the crediting provisions of 66.A.25 (b) (Full or partial credit against..) should be kept in any case. The provisions of Section B, Subpart E should also be kept and enabled for ELA-Licences Justification: In some Member States aero clubs offered its members theoretical and practical maintenance training including examination. Especially in those Member States which currently do not have a state licensing system for this type of certifying staff aero clubs established their own training and examination system. It's reasonable that some of the knowledge obtained should be credited.

66.A.25
Paragraph (b) should of present Part 66 should be kept for crediting of basic knowledge.

Justification:
It seems to be envisaged to that this paragraph is to be deleted. This might be an editorial mistake. In this case the numbering should be reviewed.

Additionally it was not in the TOR to remove this provision from 66 licences other that B3 and ELA. Furthermore it males sense to enable that rule also for B3 and ELA-licences.

response *Accepted*

Credit for basic knowledge requirements and examination can be carried out by the NAAs based on the previous qualifications. 66.A.25(b) (now called 66.A.25(d)) remains valid for B3 and ELA licences.

comment *162* comment by: *Austro Control*

Page 6 (Explanatory Note number 16 and 17):

Comment:
The concept doesn't contain any provision for the conversion of a national license into a B3 or ELA license. This is a remarkable disadvantage concerning national licences being existent to date. (e.g. powered sailplanes, balloons and sailplanes).

Proposal:
If a MS with an adequate license system for "ELA" and or "B3" relevant qualifications/privileges available and established are willing to establish a conversion report, this option should be available.

response *Accepted*

Conversion of certifying staff qualifications valid in a Member State prior to entry into force of this Part can be converted i.a.w 66.A.70.
In the case of sailplanes, balloons and most airships we propose to introduce in Article 7 of 2042/2003 a provision for a transition period after the adoption of the amendment to the rule where the national qualifications are still valid.

resulting text: See the resulting text in the Appendix A.

A. Explanatory Note - IV. Content of the draft rules - Envisaged changes p. 7

comment *1* comment by: *Aerofab*

Is the ten year experience waiver on initial issue(with human factors & aviation law exam)for a pt 66 B3, proposed in the 66.022 /28 Aug2007/slide 8, still envisaged.

response *Noted*

The option related to replacing the basic knowledge requirements by ten years of experience has not been retained, as this is contradictory to ICAO Annex I related to the issuance of licences.

resulting text: See the resulting text in the Appendix A.

B. DRAFT RULES - I. Draft Opinion (EC) No 2042/2003 - Part-145: 145.A.30 p. 9

comment *6* comment by: *CAA-NL*

For aircraft in sub-category B3 it should be possible to use category A2 staff (to perform and release minor scheduled line maintenance and simple defect rectification as is the case for other aircraft). This will change the second part of 145.A.30 g)

"g).....In addition such organisations may also use appropriately task trained certifying staff qualified as category A in accordance with Part-66 and 145.A.35 to carry out minor scheduled line maintenance and simple defect rectification. The availability of such category A certifying staff shall not replace the need for Part-66 category B1, B2 **or B3** certifying staff to support the category A certifying staff. However, such Part-66 category B1, B2 **or B3 staff, as necessary,** need not always be present at the line station during minor scheduled line maintenance or simple defect rectification."

response *Accepted*

145.A.30(g) has been amended accordingly

comment *7* comment by: *CAA-NL*

- The possibilities for releasing aircraft after **base maintenance** are not clear. Base maintenance of large aircraft requires both B1 and B2 to support category C. For other than large aircraft this was already optional. For ELA-2 Base maintenance is covered by the NPA through the addition of B3 in 145.A.30(h). For ELA-1 this is not covered, however there is a split in simple and full ELA licences.

This NPA gives 4 different kind of aircraft:

- Large or complex
- Medium light & simple
- light & simple (ELA-2)
- Very light & simple (ELA-1)

It would be more transparent without any overlap in type ratings within these four kind of aircraft.

1) in the case of base maintenance of **large aircraft** have either:
i) appropriate aircraft type rated certifying staff qualified in category C supported by B1 and B2 support staff, as necessary, as specified in paragraph (145.A.35 (h)1).

2) in the case of base maintenance of **Medium light and simple** aircraft have either:
i) appropriate aircraft type rated certifying staff qualified in category C assisted by B1 and B2 support staff, as necessary, as specified in paragraph (145.A.35 (h)1).
ii) appropriate aircraft type rated certifying staff qualified as category **B1** and **B2** as necessary, in accordance with Part-66 and 145.A.35.

3) in the case of base maintenance of **light and simple aircraft** have either:
i) appropriate aircraft type rated certifying staff qualified in category C assisted by B3 and B2 support staff, as necessary, as specified in paragraph (145.A.35 (h)1).
ii) appropriate aircraft type rated certifying staff qualified as category **B3** and **B2** as necessary, in accordance with Part-66 and 145.A.35.

4) in the case of base maintenance of **very light and simple aircraft** have either:
i) appropriate aircraft type rated certifying staff qualified in category C assisted by ELA or B2 support staff, as necessary, as specified in paragraph (145.A.35 (h)1).
ii) appropriate aircraft type rated certifying staff qualified as category **ELA** (Full ELA) or **B2** as necessary, in accordance with Part-66 and 145.A.35.

response

Not accepted

The licensing system cannot be built as suggested without overlap, because:
- this would require additional definition of medium aircraft, light aircraft, simple aircraft …
- a 145 approved organisation may work on aircraft above and aircraft below 2000 Kg MTOM, there is no reason to differentiate requirements in 145.A.30(h),
- a B1.2 licence holder must have the possibility to work and release aircraft very similar which have a MTOM below 2000 Kg, there must be overlaps.

resulting text

See the resulting text in the Appendix A.

B. DRAFT RULES - I. Draft Opinion (EC) No 2042/2003 - Part-145: 145.A.35 p. 9-10

comment

23 comment by: *CAA-NL*

In 145.A.30 h)2. reduces the requirements for certifying staff in Base maintenance for **other than large aircraft**.

It would make more sense to require the same for **complex aircraft** as for large aircraft. (Also more in line with NPA 2007-07 "group 1: large and complex a/c" NPA 2007-007 states that EASA will define which aircraft are complex.)

(h) Any organisation maintaining aircraft, except where stated otherwise in paragraph (j) shall:
...

2. in the case of base maintenance of other than large **and complex aircraft** have either:
(i) appropriate aircraft type rated certifying staff qualified as category B1, and B2 and B3, as necessary, in accordance with Part-66 and 145.A.35 or,
(ii) appropriate aircraft type rated certifying staff qualified in category C assisted.

If the four kinds of aircraft from comment 97 are taken, Category C could be optional for light and very light aircraft (ELA-1 & ELA-2):
- Large or complex aircraft (A,B1,B2,C)
- Medium and simple aircraft (A,B1,B2, optional C)
- light and simple aircraft (B3, B2, optional C)
- Very light and simple aircraft. (ELA, B2 optional C)

response *Partially accepted*

The basic regulation 216/2008 introduces the concept of complex motor-powered. As a result of this, the EC regulation 2042/2003 will need to be adapted to the definition of "complex motor-powered aircraft". The Agency intends to do such "adaptation" by means of another rulemaking task (MDM.047).

comment *85* comment by: *uk laa*

Paragraph 145.A.35 (m) states that the minimum age for certifying staff is 21. We feel that this may be too onerous, especially for B3 and ELA licence categories, and is not realistic in today's modern world allowing all sorts of other privileges to people of younger age. We think that 19, or 20, would be more appropriate.

response *Not accepted*

The requirement of 21 years of age is only applicable to the Part-145 environment. In this environment, the Agency does not find reasonable to lower the age limit because of the higher complexity of the organisation and associated procedures,
No requirement exists in subpart-F nor in M.A.801(b)(2) for independent certifying staff other than the 18 years of age needed in order to get the licence (required in Part-66).

comment *135* comment by: *ECOGAS*

Re Para 145.A.35 (m)

Is it possible to consider a lower age limit for this simplified qualification? I some Member States it is possible to start work at age 16, and be competent on simple systems well before age 21. We suggest an age threashold of 18 years, if this is acceptable in the ICAO framework.

response *Not accepted*

The requirement of 21 years of age is only applicable to the Part-145 environment. In this environment, the Agency does not find reasonable to lower the age limit because of the higher complexity of the organisation and associated procedures,
No requirement exists in subpart-F nor in M.A.801(b)(2) for independent certifying staff other than the 18 years of age needed in order to get the

licence (required in Part-66).
In addition, nothing prevents having younger persons performing maintenance as long as they are not authorised as certifying staff and they are appropriately qualified or work under the appropriate supervision. Obviously, their work will need to be released by certifying staff.

comment *144* comment by: *Jim Hammerton BGA*

145 A.35 (c)
recentcy requirements of six months in two years is too onerous for volunteer inspectors involved with sailplane and powered sailplane certification on an occasional basis. the sport cannot loose these certifiers or it will lead in a reduction in safety due to shortage of certifiers. in addition many years of experience will be lost as older inspectors tend to allow younger personell to take over whilst still being available.

response *Not accepted*

The Decision 2007-18 provides details of what should be understood by 6 months experience where reduced minimum experience is provided for independent certifying staff.

B. DRAFT RULES - I. Draft Opinion (EC) No 2042/2003 - Part-66: 66.A.1 p. 12-13

comment *16* comment by: *Mainteance Group Royal Aero Society (UK)*

with the proposed system there is a gap between ELA2 and B3/B1 between 2000kgs and 2730kgs. Could the ELA2 bar be raised to ease Subpart F organisations?

response *Not accepted*

The category L licence authorises staff to release aircraft up to MTOM 1000 Kg, and B3 licence authorises staff to release aeroplanes up to 2000Kg, this limit has been determined during the working group 66.022 and the Regulatory Impact Assessment in NPA 2008-03 explains why the limit of 2000 Kg has been selected.
A B1.2 sub-category licence holder may authorise release to service of piston engine aeroplanes without limit of mass. The B1.2 licence includes the aircraft in the B3 category.
Consequently there is no gap which is not covered.
The limit of 2730 Kg is in Part-M for alleviated measures and, in particular, it is the maximum mass of aircraft for the pilot-owner authorisation in M.A 803.

comment *17* comment by: *Mainteance Group Royal Aero Society (UK)*

The LESG, RAeS cannot see where a person working on small aircraft are going to need knowledge of airships. Can Airships be moved from the document and placed as supplemental rating?

response *Noted*

An applicant to an L licence for small aircraft does not need to select the ratings related to balloons and airships. This applicant may select only those related to the relevant airframe (metal, wooden of composite) and the

powerplant

comment

20 comment by: *Dutch gliding association*

The basic ratings for full ELA for wooden, composite and metal aircraft should exclude powerplant, because the majority of gliders does not have an engine. There should basic rating for FULL-ELA licence: powerplant.

Frank Beemster

Dutch Gliding Association

response

Not accepted

An applicant to a Full L licence for sailplanes only needs selecting the ratings related to Sailplanes, which do not require training on powerplant.
However in the case he wishes to work on powered-sailplanes, then he needs to select the rating "aircraft" in the corresponding material (composite, wooden, metal), which includes the powerplant and requires the corresponding training. See 66.A.1(d) and AMC 66.A.1(d).

comment

26 comment by: *CAA-NL*

To keep the structure transparent and simple the introduction of **ELA "levels"** seems not a good idea. It is similar to the **sub-categories** in category A and B1.

It becomes further confusing by the use of **basic rating** in 66.B.115; Are both ELA levels; "Full-ELA" and "Basic-ELA", "basic ratings"?

Furthermore the use of basic is confusing because many people use basic also for a Part-66 AML B1 or B2 without type-rating, because it is only based on basic knowledge and experience not on type training or examination.

Alternative could be 'simple-ELA' and "full-ELA" to avoid confusion with the limitations.

response

Partially accepted

To simplify the wording,
- the Basic Ratings have been replaced by Ratings,
- the Basic L licence has been replaced by Limited L licence.

However Limited or Full "Levels" cannot be re-named "sub-categories", as they do not refer to sub-categories of aircraft but to 2 levels of licences.

comment

44 comment by: *CAA-NL*

66.A.1 Standardise text with 66.A.30 i).
66.A.1 should refer to Appendix VI. (An appendix, which is not referred to, should be deleted)

response

Noted

The Appendix VI (becomes VII) refers to basic knowledge for the L license. It is referred to in paragraph 66.A.25(b) Basic knowledge.

There is no need to refer to the Appendix VI (become Appendix VII) in 66.A.1.

comment *58* comment by: *Aircraft Engineers International (AEI)*

Page 12 of 106 **B) Draft Opinion on Part-66,** *SECTION A***,** SUBPART A, *AIRCRAFT MAINTENANCE LICENCE*

66.A.1 Scope

(a) This section establishes the requirements for the issue of an aircraft maintenance licence and
conditions of its validity and use, within ~~for aeroplanes and helicopters of~~ the following
categories:
- Category A
- Category B1
- Category B2
- Category B3
- Category C
- Category ELA
~~- Category C~~

Reason: The original sequence of licence letter designation was alphabetical. It is better to keep using that then putting the licences in any other sequence.

response *Partially accepted*

The category ELA licence has been replaced by category L licence. The intent is to avoid confusion between the aircraft benefiting of the ELA process and aircraft within the scope of L licence. As a consequence the list of Part-66 categories are in the following order:

- Category A
- Category B1
- Category B2
- Category B3
- Category C
- Category L

comment *70* comment by: *Ian HEY*

Paragraph 66.A.1 (d) describes the basic ratings for the Basic and Full ELA licences. However the words used to describe the ratings are not the same between the two licences, which at best is confusing and at worst will make transition from the Basic to the Full licence unnecessarily difficult. In particular, the Basic licence ratings are split by airframe type, and include powerplant as a separate rating, whereas the Full licence ratings tie the airframe to the powerplant. This means that someone with specialist engine knowlege, eg: engine agent employee, will either not be able to hold a Full ELA licence, or will need to undergo airframe training not necessary for the work they will carry out. This constitutes a restriction to trade imposed by the regulations and is not acceptable, and may remove from some people the means to earn their living.

The powerplant rating must be separate from the airframe rating, and the Full ELA licence ratings must be changed to ensure this.

In addition the Full ELA licence includes sailplanes as separate ratings, but there is no rating for sailplanes with engines, either self sustainer or for launching. It is also not clear where SLMG and TMG fit in the licence ratings - are they aircraft or sailplanes? This must be made clear. (Currently in the UK there are different ratings for self sustainer engines and all types of self launching engines)

response *Partially accepted*

In order to simplify the text for the L-licence, the wording "basic rating" has been changed to "rating".
The reason why the Full-L licence requires to have both airframe and powerplant (they are tied together) is because the Full-L licence allows the release of an annual inspection, which needs to cover airframe and powerplant.
Nevertheless, a person can hold a Limited-L licence for airframe only or for powerplant only but this Limited-L licence does not allow the release of an annual inspection.
For motor-powered sailplanes (which includes self-sustainers and self-launching) the position of the Agency is that there is a need to be competent on airframe and engine. As a consequence, the required rating for the Full-L licence is the rating "aircraft" (for the corresponding material).

comment *92* comment by: *CAA-NL*

This will lead to confusion:
B3 is applicable to **ELA 2** aircraft.
ELA is **not** applicable to **ELA 2** aircraft.

response *Partially accepted*

The Agency notes that the B3 licence, as amended in this CRD, is not applicable to all ELA2 aircraft (sailplanes, balloons and airships are not covered by the B3 licence).

Nevertheless, in order to avoid confusion, the ELA licence is now called category L and it covers all ELA1 aircraft plus some ELA2 aircraft (all balloons and some airships).

comment *104* comment by: *UK CAA*

Comment
2000kg weight limit not reflected in current type rating list.

Justification
Avoid conflict between B1.2 and B3 type ratings.

Proposed text
Part-66 AMC Appendix I to reflect new type rating designation.

response *Not accepted*

The Agency notes that the B1.2 licence can be used also on piston-engine aeroplanes below 2000 Kg.
In addition, for the purpose of the NAA issuing a B3 licence it is not necessary for them to know which aircraft types are included because the only rating that can be endorsed is "piston-engine non-pressurised aeroplanes of 2000 Kg

MTOM and below".
On the other hand, we understand that it may not be evident for certifying staff to know what is the mass of an aircraft before carrying maintenance and which licence is required, B1.2 or B3, but the information should be found in the Flight Manual.

comment

105 comment by: *UK CAA*

Comment
Delete the word "Basic" from the start of the titles for the two ELA licences.

Justification
Typographical error.

response

Accepted

The wording "basic" on L licences has been replaced with "Limited"-L licence.

comment

131 comment by: *European Sailplane Manufacturers*

The European sailplane manufacturers would like to see a clarification regarding the definition of the ELA category.

As it is worded here it is clear that being a "complex motor-powered aircraft" automatically exludes this aircraft from the ELA definition.

In the new basic regulation EC 216/2008 the"complex motor-powered aircraft" is now defined as either

- a tilt rotor aircraft

- a helicopter over 3175 kg / with more than 9 passengers / with a minimum crew of 2 or more

- an aeroplane over 5700 kg / more than 19 passengers / with a minimum crew of 2 or more / with a turbojet or more / with more than one turboprops.

It has now been asked several times what to to with a powered glider which is equiped with a jet engine.
Some argue this is an aeroplane and therefore "complex motor-powered aircraft" some say that an aeroplane is always a small motor aircraft which needs the engine to fly regularly whereas a powered sailplane can operate with engine shut off as normal operating mode.

When going through existing regulation it becomes clear that indeed EASA considered aeroplanes not to be (powered or non-powered) sailplanes. So does ICAO when defining in Annex 8 Pat V "small aeroplanes" as those which "are known in some states as normal, utility or aerobatic aeroplanes" (clearly referring to the CS-23 or FAR 23 category).

Therefore the European sailplane manufacturers propose the following wording for paragraph 66.A.1:

...
(d) Category ELA is applicable to any of the following aircraft:

- sailplanes and powered sailplanes
- aeroplanes with MTOM less than 1000 kg, that are not classified as "complex motor-powered aircraft"
- A ballon
- .....

With this wording the sense is completely clear and it will not happen that someone is considering a sailplane with a model turbine jet as self-sustainer to be a complex aircraft when an aeroplane with a turboprop with 5600 kg MTOM and 18 passengers would be no complex aircraft!

response *Accepted*

The wording "not classified as complex motor-powered aircraft" has been removed from the scope of the category L licence.

Note: any sailplane even equipped with a jet engine has been certificated in accordance with CS-22, therefore is not classified as an aeroplane, and cannot be considered as a "complex motor-powered aircraft".

comment *145* comment by: *Jim Hammerton BGA*

66 A.1 Scope (d)
B3 and ELA ratings do not appear to cover mixed airframes i.e. metal tube airframe with wooden structure wings. the majority of older sailplanes are in this group.

response *Accepted*

AMC to 66.A.1(d) reworded and title of training module L4 changed accordingly.

comment *149* comment by: *Graham HALLETT*

66A.A.1, d
With the creation of the ELA licence covering aeroplanes as well as balloons and airships, once again it has not been recognised how much simpler balloons and airships are compared to even the simplest of aeroplanes. We in the ballooning community will be subject to more complex rules than are required because of this lack of understanding. This would seem contrary to paragraph 8 of the preamble to the basic regulation 216/2008 which sets out the principle that 'For non-commercial operations, the operational and licensing rules should be tailored to the complexity of the aircraft....'.

response *Noted*

Please refer to answer made to comment 140 from the Chairman Technical Committee British Balloon and Airship Club.

B. DRAFT RULES - I. Draft Opinion (EC) No 2042/2003 - Part-66: 66.A.20 p. 14

comment *4* comment by: *George Knight*

The UK CAA are out to consultation with their proposals that include a requirement for gliders and sailplanes to be fitted with Mode 'S' transponders and use them at all times in all types of airspace down to and including class G.

Routine Serviceability Checks - Transponders
Please expand the priviliges of the ELA Basic and Full licences to **explicitly** state that they can perform the routine checks using appropriate test equipment to verify that a Mode 'S' transponder is servicable. These tests are believed to be required every one to two years.

Routine VHF Radio Frequency Checks
Please expands the privileges of the ELA Basic and Full licences to **explicitly** state that they can perform the routine frequency checks on VHF radios fitted to gliders using appropriate test equipment.

Installations
Please expand the privileges of the ELA Basic and Full licences to enable the fitment of VHF Radios and Mode 'S' transponders to sailplanes when using a kit that does not require coaxial cables to be fabricated.

If the above simple operations require a "Simple Avionics" rating to be an option on the ELA Basic and Full licenses please add this to the document with appropriate training etc..

Justification
Gliders & sailplanes are not normally maintained and serviced at premises with full avionics capabilities. Gliders are often based very remote from such facilities and the burden of having to transport gliders to such facilities is unreasonable.

A simple rating to enable Radios and transponders to be installed and functionally checked using appropriate test equipment will be a big benefit if it allows sailplane maintainers with ELA licenses to perform these routine tasks.

response

Partially accepted

The paragraph 66.A.20 has been modified to state that for Full-L licence:

- For the "Radio/Comm/Transponder" rating: issue certificates of release to service following maintenance on radio, communication and transponder systems.
- For all the other ratings: issue certificates of release to service following maintenance on aircraft structure, powerplant (when applicable), mechanical and electrical systems as well as work on avionic systems not requiring troubleshooting and requiring simple tests to prove their serviceability.

These activities include maintenance on mode S transponder, VHF radios including routine checks.

comment

9 comment by: *CAA-NL*

66.A.20 (a) 4 refers to Module 7.7. This is the first and only place where privileges are related to the basic knowledge requirements. This is the wrong way around: privileges require basic knowledge but basic knowledge does not give privileges. It will raise numerous questions about other things that could

	be allowed based on the basic knowledge. Furthermore "Avionics troubleshooting" is introduced without definition and can better be left out because it is prone to numerous interpretations. suggest to use: A category B3 aircraft maintenance licence shall permit the holder to issue certificates of release to service following maintenance, including aircraft structure, powerplant and mechanical and electrical systems. Work on Avionic systems **and Electrical wires and connectors,** requiring simple tests to prove their serviceability, shall also be included in the privileges.
response	*Partially accepted* The text is modified to read: "Work on avionic systems requiring simple tests to prove their serviceability shall also be included in the privileges. Troubleshooting on avionic systems is not allowed." Clearer definition of "electrical systems" and "avionics systems" is envisaged through a separate opinion following NPA 2007-07.

comment	*10* comment by: *CAA-NL* Basic ELA is introduced: this is confusing because 'basic' is not used for other categories; furthermore many people refer to a licence without typerating as a basic licence. Better would be to use simple ELA. Full ELA is introduced. Just ELA would be sufficient if basic is changed in 'simple'. **(Basically the whole concept of maintenance licences needs redesign to simplify the whole system.)**
response	*Partially accepted* To simplify the wording, - the Basic Ratings have been replaced by Ratings, - the Basic L licence has been replaced by Limited L licence. However Limited or Full "Levels" cannot be re-named "sub-categories", as they do not refer to sub-categories of aircraft but to 2 levels of licences.

comment	*21* comment by: *Dutch gliding association* Privileges Basic ELA are too limited. There is no relation between an annual inspection and the complexity of a task, which must be performed. The majority of the tasks, which must be performed during an annual inspection, are simple visual inspections and measurements. Suggestion: Module 11: procedure of physical inspection should be part of ELA basic course. Scope of ELA basic should be: does not allow to release an aircraft after major modification and repairs. These are the privileges of the Full-ELA.

Frank Beemster

Dutch Gliding Association

response *Not accepted*

Since the annual inspection is the deepest inspection on sailplanes and motor-powered sailplanes, it is justified that it has to be released by more qualified personnel.

comment *22* comment by: *Dutch gliding association*

In part 66 there is no definition of a major modification or repair. Furthermore, what is the relation between major modifications/repairs and complex maintenance tasks as defined in Part M?

Frank Beemster

Dutch Gliding Association

response *Noted*

The concept of "major" or "minor" modification is defined in part-21.A.70. Only a DOA holder (Part-21 subpart J) for Design approved organisation (like the TC holder) has the privilege of classifying a repair or a modification as minor or major, and to design the repair or modification solutions.
The intent in this NPA is to give the privilege to a Full ELA licence holder, to certify the release of an ELA aircraft after the implementation of such modification or repair solution classified as major by a DOA organisation. This does not include the design of modifications or repair solutions.

There is no relation between the classification "major" "minor" with the "complex maintenance tasks" as defined in Part-M.
The issue related to "complex maintenance tasks" is in the paragraph M.A.801(b)(2) which gives the possibility to certifying staff holding a Part-66 licence "individuals engineers" to certify the release of an aircraft in compliance with Part-M, except when a "complex task" has been carried out in accordance with Appendix VII. This means that "complex tasks" cannot be certified by "individual engineers", but shall be carried out and certified by a certifying staff of a subpart-F organisation only in accordance with M.A.801(b)(1).

comment *74* comment by: *Danish Soaring Association*

In 66.A.20.(a).5 it is stated, that the Basic ELA aircraft maintenance license does not allow the release of complete aircraft after annual inspections, and after major repairs and modifications as well. We fully agree with the exclusion of major repairs and modifications, but we do not agree with the exclusion of the annual inspections. It might be necessary with some more training in specific subjects to obtain this privilege, but if so, we think it should be amended to the basic training syllabus.

Justification:
Carrying out an annual inspection is not as big a task, that it requires all the skill of a holder of a Full ELA License, at least not regarding sailplanes. We prefer that the Basic ELA License training is extended with the necessary

subjects to obtain the privileges to allow release of an aircraft after annual inspection - eventually limited to sailplanes and powered sailplanes.

response *Not accepted*

Refer to answer to comment 21.

comment *78* comment by: *British Gliding Association*

66.A.1(d) and 66.A.20

We do not understand why the sub-ratings for the BASIC and FULL ELA licences are configured differently. In the BASIC licence the powerplant is a separate rating, not so in the FULL- licence.

For the present we assume this is because a BASIC licence holder are not authorised to release complete aircraft (66.A.20). This is disappointing as, in our view, the occurance of maintenance items requiring the attention of an engineer (beyond pilot owner maintenance on simple aircraft) between annual inspections will be quite low, leaving this class of engineer under-occupied. Indeed the need for two separate levels of ELA licensing is not clear. We would prefer a formula whereby the BASIC qualification was viewed a probationary period of say two years experience before accreditation to a FULL licence.

Consideration also needs to be given, particularly in the case of motorgliders and self-sustainers as to the validity of the joint clearance of an aircraft by two individuals one 'airframe' and the other 'engine' qualified. How many (one only?) need to hold FULL ratings?

response *Noted*

The intention was to give to a Limited L licence holder (with the "airframe" rating) the privilege to start working on airframes of aircraft and release them after some works, not including the engine.
This gives this person the privilege to release sailplanes and airframes of aeroplanes after minor tasks. This person is not involved in the maintenance of powerplant.

Once he has gained additional training, practice and 2 years more experience on aircraft including motor-powered sailplanes, then he may work on the full aircraft, including the engine. This is why the Full L licence owner can release a full aircraft after an annual inspection.

The reason why two separate levels were defined was to create an entry level where the maintenance personnel can certify some tasks and at the same time he gains experience.

comment *106* comment by: *UK CAA*

Comment
This new paragraph for the B3 licence specifically makes reference to Part 66, Appendix 1, Module 7.7. This details the privileges of the licence holder with respect to Electrical cables and connectors. Although the privileges of a B1 licence as detailed in paragraph 2 include 'Electrical', as no reference is made to this module, clarification is required concerning the privileges of a B1 licence with respect to Electrical cables and connectors.

Justification
If the privileges of Part 66, Appendix 1, Module 7.7, are included in the B1 licence there should be consistency between the B1 and B3 licence. Better clarification of the regulation.

response *Partially accepted*

This was already addressed in NPA2007-07 and such reference to the Modules have been removed.

Refer to answer made to comment No.9 to CAA-NL.

comment *121* comment by: *Walter Gessky*

Page 14, 66.A. 20 (a)5, Basic ELA:
An „Annual Inspection" is not defined within the EASA-System - only FAA Part-43 contains a definition thereof.
Clarification is required.

response *Partially accepted*

66.A.20(a)5 has been modified to read: annual inspections or "equivalent".
The term "equivalent" has been explained in AMC 66.A.20(a) as the deepest inspection required in the maintenance programme to be performed every year.
These inspections are typically defined by the manufacturer, but they may also be defined by the Competent Authority or by the operator if there is no information from the manufacturer.
In any case, it is not the competence of the Agency to define the content of such inspections.

comment *163* comment by: *Austro Control*

Page 14 (66.A.20 (a) 5 second paragraph)

Comment:
Basic-ELA: "no release following "Annual inspection"
There is no definition of an „Annual Inspection" existing within the EASA-System - only FAA Part-43 contains a definition thereof.

Proposal:
A definition equivalent tot FAR Part-43 should be established. It is recommended not using a different definition. This wording is worldwide used and known as being according to Part-43.

response *Partially accepted*

66.A.20(a)5 has been modified to read: annual inspections or "equivalent".
The term "equivalent" has been explained in AMC 66.A.20(a) as the deepest inspection required in the maintenance programme to be performed every year.
These inspections are typically defined by the manufacturer, but they may also be defined by the Competent Authority or by the operator if there is no information from the manufacturer.
In any case, it is not the competence of the Agency to define the content of such inspections.

B. DRAFT RULES - I. Draft Opinion (EC) No 2042/2003 - Part-66: 66.A.25 p. 14-15

comment *100* comment by: *Aero-Club of Switzerland*

To letter (b): Where can the necessary practical experience come from? Do you expect an applicant to a licence having worked at a NAA- or a EASA-licensed maintenance facility? What is your proposal to the duration of the necessary transition period?

To letter (c): idem

response *Noted*

The necessary experience referred to in 66.A.30(a)6(i) and (ii) is described in AMC 66.A.30(a)6 and 7.
Experience may be gained in maintenance organisations approved under national approval or in subpart-F/Part-145 organisations under the supervision of certifying staff, or working under the supervision of independent certifying staff.

The transition period is described in Article 7 of EC2042/2003, and includes, 3 years after entry into force of this regulation, during which national qualifications may be used instead of B3 and L licences.

comment *137* ❖ comment by: *Deutscher Aero Club e.V. (DAeC)*

17. Crediting

For those persons who obtained Aero Club internal training which can actually not easily converted, the crediting provisions of 66.A.25 (b) (Full or partial credit against..) should be kept in any case. The provisions of Section B, Subpart E should also be kept and enabled for ELA-Licences.

Justification:
The DAeC offered its members substantial theoretical and practical maintenance training including examination. These courses had not resulted in an state licence but have been recognized by LBA for realising aircraft slightly above the Pilot-Owner maintenance level. It's reasonable that some of the knowledge obtained should be credited.

response *Noted*

The possibility to get a credit on basic knowledge requirements has not been removed. The paragraph 66.A.25(b) shall only be renumbered 66.A.25(d), as mentioned in the proposal.

comment *139* comment by: *Deutscher Aero Club e.V. (DAeC)*

Paragraph (b) should of present Part 66 should be kept for crediting of basic knowledge.

Justification:
It seems to be envisaged to that this paragraph is to be deleted. This might be an editorial mistake. In this case the numbering should be reviewed.

Additionally it was not in the TOR to remove this provision from 66 licences other that B3 and ELA. Furthermore it males sense to enable that rule also for B3 and ELA-licences.

response

Noted

Refer to answer made to comment 137 here above.

comment

150 comment by: *Graham HALLETT*

66.A.25.b & c

It would appear that only Basic ELA licence applicants may replace training with experience rather than Full ELA applicants also. In the case of certifying staff for balloons, this must be extended to allow applicants for the Full ELA maintenance license to similarly use their wealth of experience in lieu of formal training.

response

Noted

The holder of a qualification (in the form of a national certification or authorisation) to certify the CRS of an aircraft may under 66.A.70 be granted a Part-66 licence by conversion process.

comment

160 ❖ comment by: *Deutscher Aero Club*

17. Crediting
For those persons who obtained aero club internal training which can actually not easily converted, the crediting provisions of 66.A.25 (b) (Full or partial credit against..) should be kept in any case. The provisions of Section B, Subpart E should also be kept and enabled for ELA-Licences

Justification:
In some Member States aero clubs offered its members theoretical and practical maintenance training including examination. Especially in those Member States which currently do not have a state licensing system for this type of certifying staff aero clubs established their own training and examination system. It's reasonable that some of the knowledge obtained should be credited.

66.A.25
Paragraph (b) should of present Part 66 should be kept for crediting of basic knowledge.

Justification:
It seems to be envisaged to that this paragraph is to be deleted. This might be an editorial mistake. In this case the numbering should be reviewed.

Additionally it was not in the TOR to remove this provision from 66 licences other that B3 and ELA. Furthermore it males sense to enable that rule also for B3 and ELA-licences.

response

Noted

The possibility to get a credit on basic knowledge requirements has not been removed.

Refer to answer made to comment No. 137 from DAeC.

B. DRAFT RULES - I. Draft Opinion (EC) No 2042/2003 - Part-66: 66.A.30 p. 15

comment *11* comment by: *CAA-NL*

Page 15: 66.A.30(a)4. "non large" should be changed into "**other than large**" to be consistent.

Page 55: Application form: change "Non-large" in "Other than large"

response *Accepted*

Modified accordingly

comment *13* comment by: *CAA-NL*

66.A.30(a)7 and 8. Try to standardise wording in comparable paragraphs; Use text in (a) 1 as example: proposed text:

6. For category 'simple ELA':
(i) two years of practical maintenance experience on operating aircraft.
(ii) This can be reduced to one year of practical maintenance experience on operating aircraft, in case the applicant has completed an approved course as per 66.A.25(b)

7. For category 'ELA':
(i) two years of practical maintenance experience on operating aircraft exercising the privileges of a 'simple ELA'.

More details of the content to be given in AMC 66.A.30 as is the case for other categories.

response *Accepted*

The wording "Basic-L licence" has been replaced with Limited-L licence". Standardisation of wording within 66.A.30 has been considered as requested.

comment *26* ❖ comment by: *CAA-NL*

To keep the structure transparent and simple the introduction of **ELA "levels"** seems not a good idea. It is similar to the **sub-categories** in category A and B1.

It becomes further confusing by the use of **basic rating** in 66.B.115; Are both ELA levels; "Full-ELA" and "Basic-ELA", "basic ratings"?

Furthermore the use of basic is confusing because many people use basic also for a Part-66 AML B1 or B2 without type-rating, because it is only based on basic knowledge and experience not on type training or examination.

Alternative could be 'simple-ELA' and "full-ELA" to avoid confusion with the limitations.

response *Partially accepted*

Refer to the previous answer provided in initial comment No.14, 97 and 26 in B. DRAFT RULES.

comment

59 comment by: *Aircraft Engineers International (AEI)*

Page 15 of 106 New paragraphs 66.A.45(i) and (j) are added:
...
(i) The holder of category B3 aircraft maintenance licence may only exercise certification
privileges when the aircraft maintenance licence has been endorsed with the rating *"sailplanes,*
powered sailplanes and piston-engine non-pressurized aeroplanes of 2000 Kg MTOM and
below". This rating shall be granted following demonstration of practical experience which shall
include a representative cross-section of maintenance activities relevant to the licence
category.

Question/Opinion: Some clarification is needed. The present wording of this paragraph suggests that a licensed engineer working on "piston powered, non pressurised aeroplane of 2000kg mtom and below" will never achieve a B3 license because they have not worked on "sail planes or powered sail planes" and vice versa. How can you achieve the practical training element if you do not work on all the types of aircraft specified?

response

Partially accepted

The "sailplanes, powered-sailplanes and balloons" have been removed from the scope of the B3 licence to be covered only by the category L licence

comment

84 comment by: *The Norwegian Air Sports Federation*

The one year basic-ELA practical experience is to long.
The two year full-ELA practical experience is to long.

These are volunteers who work in non-paid free time.

response

Accepted

The minimum experience requirements to get the Limited-L and Full-L licence have been reduced by half. The reason is that the previous experience requirements proposed were slightly higher than those for the B1.2 and B3 licences.
In addition, there is the safeguard provision that the experience must anyway cover an acceptable cross-section of tasks, which is explained in AMC 66.A.30(a)6 and 7, independently of the time necessary.

comment

87 comment by: *Aero-Club of Switzerland*

Basic-ELA applicants shall be qualified in accordance with the rules prepared for pilot-owner maintenance.

Justification: Pilot-owner maintenace is what they actually have to do.

About the maintenance experience: How far in the past the once acquired

experience may have be gained? How non-licensed (for instance Swiss Air Force-) experience on modern aircraft will be valued? Is EASA prepared to propose to the Commission to accept experience gained in a up to now license-free environment?

response

Not accepted

Pilot-owners performing Pilot-owner maintenance in accordance with M.A.803 may release their own aircraft only. The holder of a category L licence may issue the CRS for any aircraft on his licence and rating. This should not be confused. In addition, the scope of tasks of the L licence is higher than Pilot-owner maintenance.

Experience for a category L licence shall be gained only on sailplanes, powered-sailplanes, balloons and aeroplanes of less than 1000 Kg MTOM. Experience on military aircraft is accepted only when gained on aircraft in this category. This is already stated in AMC to 66.A.30(e).

comment

99 comment by: *CAA Norway*

66.A.30 (a) 7
If the 2 years practical experience required means, 2 years of full time practical experience (365days X 2). I believ there will not be possible to educate new Basic-ELA "sailplane technicans" in Norway. As today we do not have any maintenance shops for sailplanes.
The system we do have in Norway are within the Aero Clubs there are people wich get controlled experiense in maintenance of sailplanes and a approved course with examination. Get an approval for maintenance of the sailplanes.
If this 2 year of practical experience can be at least 2 years of some periodic controlled practical experience in an Aero Club working environment (not full 365days x 2) then there will not be any problems for the future of the sailplane maintenance activities in Norway. And the system will be fairly like what we have today and have good experiences with.

response

Noted

Whether the 2 years of experience are full-time or partial-time is not relevant. The important issue is that the experience should cover an acceptable cross-section of tasks ranging from 50% to 80% of Appendix II to AMC (depending on the type of aircraft) and that this experience should be spread over a 2 year period. Please note that in the CRD the 2 year period has been reduced to 1 year.

comment

164 comment by: *Austro Control*

Page 16 (66.A.30 (i))

Comment:
Limitations can be reduced following approved (by the Competent Authority) training or Part-147 Training. There is no possibility foreseen that Competent Authorities are allowed to conduct such examinations. Competent Authorities which are capable to conduct examinations according to Part-66.B.200 should be allowed to conduct such examinations.

Proposal:

	The possibility to allow CA to conduct examinations should be added. (As it is already established for all other licences)
response	*Accepted* 66.A.45(i) has been amended accordingly.

B. DRAFT RULES - I. Draft Opinion (EC) No 2042/2003 - Part-66: new 66.A.45(i) and (j) p. 15-16

comment	*15* comment by: *CAA-NL* To avoid confusion; "Limitations" should state clearly either "limited to" or "excluding".
response	*Accepted* This has been amended in 66.A.45(i) and in Instruction 15 of Appendix V to Part-66. Limitations mean tasks which are excluded from the certification privileges.

comment	*24* comment by: *CAA-NL* 66.A.45 gives the requirements for type or task training and type ratings. Therefore this is not the place to restrict the privileges. Suggest to include a reference to the B3 limitations in 66.A.20 and delete "The holder of a category B3 aircraft maintenance licence may not exercise certification privileges on an aircraft which is affected by one or more of the above limitations when this (these) limitation(s) is(are) mentioned in the aircraft maintenance licence." 66.A.20 (a) 4. A category B3 aircraft maintenance licence shall permit the holder to issue certificates of release to service, within the limitations of the Licence, ...
response	*Not accepted* It is true that 66.A.45 gives the requirements for type or task training. However, it also says that without type or group ratings, certification privileges cannot be exercised. As a consequence, this is the proper place to limit privileges. 66.A.20 specifies privileges but in a more general manner.

comment	*60* comment by: *Aircraft Engineers International (AEI)* Page 16 of 106 New paragraphs 66.A.45(i) and (j) are added: ... (i) The holder of category B3 aircraft maintenance licence may only exercise certification privileges when the aircraft maintenance licence has been endorsed with the rating *"sailplanes,* *powered sailplanes and piston-engine non-pressurized aeroplanes of 2000 Kg MTOM and* *below"*. This rating shall be granted following demonstration of practical

	experience which shall include a representative cross-section of maintenance activities relevant to the licence category. Unless the applicant provides evidence of appropriate experience, the rating granted as per above paragraph, is subject to the following limitations, which shall be stated on the licence: • aeroplane retractable landing gear, • variable pitch propeller, • turbo-charged piston ~~engine~~ powerplant, • electrical and/or jet ~~engine~~ powerplant (on powered sailplanes), **Reason:** References to Engine should be; 'Powerplant' (firewall forward) and is referred to in the training syllabus. Powerplant includes mounting frame, intake and exhaust systems, propeller and controller, cowlings and cooling ducts, fuel and oil systems, engine and propeller control systems. Engine means just the basic element that is overhauled and would only include the rotating elements, crankcase and cylinders, magnetos or ignition system, engine driven pumps, starter, carburettor or injection system, supercharger or turbo charger and system.
response	*Partially accepted* The limitations mentioned in the comment have been removed from the B3 and L licences, as explained in the Explanatory Note of the CRD.

comment	*61* comment by: *Aircraft Engineers International (AEI)* Page 16 of 106 New paragraphs 66.A.45(i) and (j) are added: (j) The holder of category ELA aircraft maintenance licence may only exercise certification privileges when the aircraft maintenance licence has been endorsed with the appropriate basic ratings as described in 66.A.1(d). Unless the applicant provides evidence of appropriate experience, the basic ratings granted are subject to the following limitations, which shall be stated on the licence: • aeroplane retractable landing gear, • variable pitch propeller, • turbo-charged piston ~~engine~~ powerplant, • electrical and/or jet ~~engine~~ powerplant (on powered sailplanes) **Reason:** References to Engine should be; 'Powerplant' (firewall forward) and is referred to in the training syllabus. Powerplant includes mounting frame, intake and exhaust systems, propeller and controller, cowlings and cooling ducts, fuel and oil systems, engine and propeller control systems. Engine means just the basic element that is overhauled and would only include the rotating elements, crankcase and cylinders, magnetos or ignition system, engine driven pumps, starter, carburettor or injection system, supercharger or turbo charger and system.
response	*Partially accepted*

See comment 60 above.

comment 79 comment by: *British Gliding Association*

66.A.45 (i) and (j) [for example] (item 1)

While balloon catagories are carefully annotated within the document we find a lack of clarity concerning sub-classes of sailplane. It is our understanding that sailplanes are not included as 'aeroplanes', but as 'aircraft'.

This is important, for example, in 66.A.45 (i) and (j), where we consider that no separate category should be required for the simple manual retractable undercarriages habitually incorporated in sailplanes, and motor sailplanes.

response *Noted*

It is correct that sailplanes are considered as aircraft but not aeroplanes, however sailplanes are subject to the L licence only and all limitations have been removed from the L licence.

comment 80 comment by: *British Gliding Association*

66.A.45(i) and (j) and AMC 66.a.1(d) – SCOPE (Item 2)

The requirements pertaining to self-sustaining motor gliders also needs clarification. CS22 states that the propulsion system in self sustainers is not a flight critical system, and that these aircraft are a sub category of the pure sailplane. Does the maintenance of such engines require a powerplant qualified engineer? It should be clarified whether such engines do/do not require a separate endorsement.

response *Not accepted*

Sailplanes and powered-sailplanes are certified in accordance with CS-22. However, for the Full-L Licence, they require different ratings. This is explaned in AMC 66.A.1(d).

The sailplane requires a rating among the following:

- Wooden sailplanes
- Composite sailplanes
- Metal sailplanes

while motor-powered sailplanes, due to their construction and the need for staff to have knowledge on engines and associates systems to engines, require ratings among:

- Wooden aircraft
- Composite aircraft
- Metal aircraft.

However, the only difference in training would be the powerplant.

Only for the "Limited-L", the powerplant may be endorsed as a separate rating. but for the "Full-L", the power-plant do not require a separate rating as it is included in the rating "aircraft".

comment	*52* comment by: *Finnish Aeronautical Association - Kai Mönkkönen* With reference to Part M, Finnish Aeronautical Association finds that the system of obtaining an aircraft maintenance licence for European Light Aircraft (ELA) is becoming too complicated. We propose that 1) a Part F maintenance organization 2) a suitable national sports aviation organization with a training permit or 3) a training organization be permitted to give the training leading to maintenance licences for Part 66 ELA aircraft, arrange the examinations and demonstrations of practical experience and issue the licences.
response	*Partially accepted* Nothing prevents training to be imparted and examination to be conducted by a subpart-F organisation, or a suitable national sport organisation or a training organisation (non Part-147) as long as the training meets the requirements of Appendix VI (becomes Appendix VII), the examination meets the Appendix VII (becomes Appendix VIII) and this is approved by the Competent Authority (refer to 66.A.25(b)). However the issuance of a licence is the sole privilege of the Competent Authority.

comment	*109* comment by: *Aero-Club of Switzerland* "For those airships...": For how long the Member State's Regulations shall apply: From now on indefinitely? Until suppression of Annex II (216/2008)?
response	*Noted* Airships which are not included in the scope of the category L licence remain under national regulation, and the date mentioned in 66.A.100 does not apply.

comment	*130* comment by: *European Sailplane Manufacturers* This modified paragraph 66.A.100 implies that it is acceptable to have national certifying staff with national licenses acting within the Part M system over several more years. Obviously this is considered to pose no safety risk. The European sailplane manufacturers share the view that this is a safe way to go because experience really shows that we have no safety problem in Europe due to bad maintenance (or bad certifying staff) until now. But then: Why not simply convert all existing national certifying staff licences into regarding ELA licenses? Why the 5 year limit? Asking old and experienced people akting since many years as ertifying staff on a non-paid voluntary basis is asking for loss of these very important persons.

We feel that over the years with the regular information workshops and all the information published it will automatically become a standardised European system even without forcing exoerienced staff to take another course or to make another test.

Therefore we propose an automatic conversion of national licences for certifying staff into the regarding ELA licences.

response *Partially accepted*

The text has been modified to allow existing national certifying staff qualifications to be converted to Part-66 licences under 66.A.70, including for the category L licence.

The 5 years limit (changed to 3 years in the resulting text) is to give time for issuing the appropriate EU regulation which allows the issuance of the B3 and L licences.

comment *142* comment by: *Chairman Technical Committee British Balloon and Airship Club*

Is this a hidden clause suggesting that the licence will require renewing every five years? If so what is the proposed method?

Chris Dunkley
Chairman Technical Committee
British Balloon and Airship Club

response *Noted*

The 5 year period contained in 66.A.100 (now becomes 3 year and will be part of Article 7) has nothing to do with the validity of the licence but with the transition period to start using those licences.
However, category B3 and L licences will be valid for 5 years, and renewal be granted as per 66.B.120 as any other Part-66 licence. Be reminded that a new AMC to 66.B.120 was issued under Decision 2007-018 to clarify that at the moment of renewal of the licence, the competent authority should not carry out any investigation to ensure that the licence holder is in current maintenance practices and that this is not a condition to renew the licence.

B. DRAFT RULES - I. Draft Opinion (EC) No 2042/2003 - Part-66: 66.B.110 p. 17

comment *25* comment by: *CAA-NL*

Obligation for the applicant should be moved to section A (return original licence); articles in section B should contain activities for the competent authority. Furthermore 66.B100/105/110/115 can be made more consistent.
With comment 26 it is proposed not to use "levels" but "sub-categories". Delete 'basic in basic categories; this is not used in section A and does not clarify the subject..

proposed text:
66.A.10 Application
(a) An application for an aircraft maintenance licence or amendment to such

licence shall be made on EASA Form 19 and in a manner established by the competent authority and submitted thereto. An application for the amendment to an aircraft maintenance licence shall be made to the competent authority that issued the aircraft maintenance licence.

(b) With any application to change or renewal of an existing licence the original licence should be send to the competent authority.

66.B.100 Procedure for the issue of an aircraft maintenance licence by the competent authority

(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 Part.

(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 1 have been met as required by this Part.

(c) For each category or subcategory the competent authority shall verify the basic-knowledge and practical experience. For each type rating or group-rating the competent authority shall verify the theoretical and practical type training or type examination and experience.

(d) When satisfied that the applicant meets the standards of this Part the competent authority shall issue the relevant aircraft maintenance licence to the applicant. The same information shall be kept on competent authority file.

66.B.105 Procedure for the issue of an aircraft maintenance licence via the Part-145 approved maintenance organisation

(a) A Part-145 maintenance organisation which has been authorised by the competent authority to carry out this activity may prepare the aircraft maintenance licence on behalf of the competent authority or make recommendations to the competent authority regarding the application from an individual for a aircraft maintenance licence so that the competent authority may prepare and issue such licence.

(b) The Part-145 maintenance organisation shall ensure compliance with 66.B.100 (a), (b) and (c). In all cases, the competent authority shall issue the aircraft maintenance licence to the applicant.

66.B.110 Procedure for the amendment of an aircraft maintenance licence to include an additional ~~basic~~ category or subcategory

(a) For the amendment of an aircraft maintenance licence the competent authority or the authorised Part-145 organisation shall carry out the same procedure as for initial issue of a licence(66.B.100 or 66.B.105)and verify that the original licence is returned.

(b) At the completion of the procedure as specified in 66.B.100 or 66.B.105, the competent authority shall endorse the additional category or subcategory on the aircraft maintenance licence by stamp and signature or reissue the licence. The competent authority file shall be amended accordingly.

(c) [...deleted; is mentioned in 66.A.10]

(d) [...deleted; is mentioned in 66.A.10]

66.B.115 Procedure for the amendment of an aircraft maintenance

licence to include an aircraft type or group
a) For the amendment of an aircraft maintenance licence the competent authority or the authorised Part-145 organisation shall carry out the same procedure as for initial issue of a licence(66.B.100 or 66.B.105) and verify that the original licence is returned.

b) At the completion of the procedure as specified in 66.B.100 or 66.B.105, the competent authority shall endorse the type- or group rating on the aircraft maintenance licence by stamp and signature or reissue the licence. The competent authority file shall be amended accordingly.

response *Not accepted*

This comment related to the use of the form 19 is applicable to all paragraphs 66.B.100, 105, 110, 115 and 120, as a consequence this NPA cannot take on board changes not related directly on licences B3 and L and when not planned initially by the TOR.

Nevertheless, the changes that you have proposed may not be relevant anymore once some existing opinions issued by the Agency in the past have been adopted by the Commission (currently under Comitology process).

B. DRAFT RULES - I. Draft Opinion (EC) No 2042/2003 - Part-66: Appendix 1 p. 18-19

comment *18* comment by: *Mainteance Group Royal Aero Society (UK)*

why is there no indication as to the levels of knowledge that are required for ELA, basic and Full?

response *Noted*

The level of knowledge for category L licence is shown in Appendix VI (becomes Appendix VII), depending on the rating required.

comment *27* comment by: *CAA-NL*

A more logic order or sequence for the categories would be:

A or B1 Aeroplane
B3 Aeroplane
A or B1 Helicopter
B2 Avionic

response *Not accepted*

It is not the intent of this TOR to reword this paragraph in this way.

comment *28* comment by: *CAA-NL*

Module 11 is split in Module 11**A** and 11**B**.

In Appendix I, **submodules** in Module 11A and module 11B should be listed as "**11A**" or "**11B**".

In Appendix II (2.11, 2.12) Module 11a and module 11b should be listed with

capital A and B as "**11A**" or "**11B**". (Also §2.11a and 2.11b would be easier than 2.11 and 2.12).

response *Not accepted*

This NPA cannot take on board changes not related directly to licences B3 and L and when not planned initially by the TOR. The change would impact the courses for Turbine Engine licences.
A task is planned in the rulemaking programme of EASA as "Miscellaneous Improvements to Part 66/147" task N° MDM.059 which is more appropriate to add such changes.

comment *90* comment by: *Bill Taylor*

The overall syllabus requirements for the new B3 licence for <2000 kg seem to be reasonable. I have reveiwed the level of knowledge required for the B3 compared to the B1 category and the reductions, where they have been made, seem reasonable. Where reductions in the level of knowledge have not been made, these too seem reasonable.

That said, I believe that the examination requirement based on these reduced knowledge levels is unreasonable, be see my further comment on this topic.

response *Noted*

See comment 91.

comment *165* comment by: *Austro Control*

Page 18ff Appendix I (Basic Knowledge requirements)

Comment:
A comparison between B1.2 and B3 syllabus shows the following fact:

	B1.2	B3 subjects compared with B1.2 subjects
Subjects	168	158 of B1.2 remain (10 are N/A), 2 new subjects have been added
Different level	-	53 of the B3 subjects have a lower level than B1.2
Course length (147)	2000 h	The proposed course length is 900 h. How is this justified based on the fact that the differences between B1.2 and B3 are so small?

There is no adequate course length established and justified for the B3 licence. Based on the fact that the differences between B1.2 and B3 are so small a 900 h course seems not to be adequate. In addition to that the fact as described above does questioning the sense of a B3 licence if the differences are so minimal?!

Proposal:
An adequate course length should be established.

response *Partially accepted*

Upon request from the comments, an additional study of the content of training for the B3 license has been made, which shows that the initial estimation of 900 Hours of training for the B3 licence was not an erronous estimate .
When the number of items and the level of knowledge required is identical between the B1.2 and the B3 licenses, considerations shall be taken when developing the course for the B3 licence because:

- the level of complexity of systems for B3 licence aircraft is much lower than those for the B1.2 licence,
- therefore the same course should not be provided,

this is typically the case of:

- module 7 where the inspection methods, the weighing methods, the handling of the aircraft, the storage etc.. are much more simple, therefore require less time for training,
- module 9 in which the working environment is more simple than within a Part-145 approved organisation, therefore all items do not apply in the same way,
- module 10 is differentiated between the licenses,
- module 11 where the systems are less complex therefore require less training,

This has been added in Appendix I as a Note in the header of the affected modules.

In addition some additional alleviation has been added:

- the elements of sub-module 5.15 are differentiated depending on the licenses,
- module 4.3 Servo-mechanisms is deleted,
- 11.8 is also deleted for the B3.

We also note that the sub-module 5.5 Logic Circuits has been added at level 1.

This additional study confirms that the initial estimate of hours is reasonable. Nevertheless, additional time has been provided to the training which brings the total number of required training for the B3 licence to 1000 Hours.

B. DRAFT RULES - I. Draft Opinion (EC) No 2042/2003 - Part-66: Appendix 1 - MODULE 1. PHYSICS p. 20-21

comment *29* comment by: *CAA-NL*

To avoid minimal differences it is better to require **level 1** for **2.3(b)** for Category **A.** This makes module 2 for B3 and cat A identical.

(Mimimal differences should be avoided because it will not be possible to develop an sensible examination to cover the differences for applicant wishing to extend their licence with another category.)

response *Not accepted*

This NPA cannot take on board changes related to licence category A when not planned initially by the TOR.

comment *98* comment by: *CAA-NL*

	Refer in CRD to module **2** (not 1)
response	*Accepted* The module related to PHYSICS should refer to module 2. This is a mistake when preparing the CRT. Nevertheless, the text in the proposed rule is correct.

B. DRAFT RULES - I. Draft Opinion (EC) No 2042/2003 - Part-66: Appendix 1 - MODULE 3. ELECTRICAL FUNDAMENTALS p. 22-26

comment	*107* comment by: *UK CAA* Comment As the B3 licence includes electrical privileges and there is a good possibility that this will include aircraft battery servicing, a level 2 knowledge of DC sources of electricity would seem more appropriate. The same should be considered for other knowledge levels within Electrical fundamentals. Justification The Beech BE-55 (Baron) has a MTOM of 2214 Kg, the Beech BE-75 (Duchess) has a MTOM of 1769 Kg. The electrical systems are similar and therefore the level of knowledge should be similar
response	*Accepted* The training of sub-module 3.5 has been harmonised at level 2.

comment	*122* comment by: *Walter Gessky* It is not in all areas possible "simply" amend the category B3 to the existing modules or submodules of Appendix I. Changing the Levels only is not always a reasonable/meaningful instrument to implement the category B3 in the existing Appendix. Samples where clarification might be required: Module 10.7 (a), MMEL, (b), ETOPS, Cat 2/3, MMEL, MEL this should be deleted for B 3
response	*Partially accepted* The B3 licence scope has been modified to keep only "piston engine non-pressurised aeroplanes of 2T MTOM and less", therefore there was no evidence that alleviating the level of syllabus for the B1.2 towards the B3 was not reasonable. The MMEL, Dispatch deviation list and ETOPS, maintenance and dispatch requirements, all weather operations, category 2/3 have been removed from the B3 licence.

B. DRAFT RULES - I. Draft Opinion (EC) No 2042/2003 - Part-66: Appendix 1 - MODULE 5. DIGITAL TECHNIQUES ELECTRONIC INSTRUMENT SYSTEMS p. 28-30

comment	*30* comment by: *CAA-NL* Add "/" (or and) in the module title to better indicate that it covers both MODULE 5. DIGITAL TECHNIQUES / ELECTRONIC INSTRUMENT SYSTEMS
response	*Accepted* Modified accordingly.

B. DRAFT RULES - I. Draft Opinion (EC) No 2042/2003 - Part-66: Appendix 1 - MODULE 7. MAINTENANCE PRACTICES p. 34-38

comment	*31* comment by: *CAA-NL* 7.16 (c) delete "(only required for B3)" because this is redundant information, not given for other subjects either.
response	*Partially accepted* The knowledge requirement in module 7.16(c) is removed because Sailplanes are removed from the scope of the B3 licence.

comment	*32* comment by: *CAA-NL* 7.16 (c): Suggest to increase water ballast for B3 to level 2. The B3 will be fully responsible for these systems.
response	*Not accepted* Refer to answer to comment 31 here above

comment	*127* comment by: *Swedish Transport Agency, Civil Aviation Department (Transportstyrelsen, Luftfartsavdelningen)* Page 36. Submodule 7.16 (c). Sailplanes water ballast. It is inconsistent that the B3 syllabus requires modules that is not required in the B1 syllabus, and still the B1.2 licence covers the scope for a B3 licence holder.
response	*Accepted* Sailplanes and powered-sailplanes have been removed from the B3 license. They are part of the L license only.

B. DRAFT RULES - I. Draft Opinion (EC) No 2042/2003 - Part-66: Appendix 1 - MODULE 11B. PISTON AEROPLANE, SAILPLANE AND POWERED SAILPLANE AERODYNAMICS, STRUCTURES AND SYSTEMS p. 42-47

comment	*28* ❖ comment by: *CAA-NL* Module 11 is split in Module 11**A** and 11**B**. In Appendix I, **submodules** in Module 11A and module 11B should be listed as "**11A**" or "**11B**".

	In Appendix II (2.11, 2.12) Module 11a and module 11b should be listed with capital A and B as "**11A**" or "**11B**". (Also §2.11a and 2.11b would be easier than 2.11 and 2.12).
response	*Not accepted* Already answered in comment 28 of section B. DRAFT RULES .

comment	*34* comment by: *CAA-NL* 11.18 should be subdivided in to a) and b) both with their separate level indications (level 2 for B3). This to be more consistent.
response	*Partially accepted* 11.18 has been removed from Module 11 because Sailplanes are not any more in the scope of the licence category B3.

comment	*128* comment by: *Swedish Transport Agency, Civil Aviation Department (Transportstyrelsen, Luftfartsavdelningen)* Page 47. Sub module 11.18. Electrical engine / jet engine (for motor-powered sailplanes). It is inconsistent that the B3 syllabus requires modules that is not required in the B1 syllabus, and still the B1.2 licence covers the scope for a B3 licence holder.
response	*Accepted* Sailplanes and powered-sailplanes have been removed from the B3 license. They are part of the L license only.

B. DRAFT RULES - I. Draft Opinion (EC) No 2042/2003 - Part-66: Appendix 2 p. 52-53

comment	*28* ❖ comment by: *CAA-NL* Module 11 is split in Module 11**A** and 11**B**. In Appendix I, **submodules** in Module 11A and module 11B should be listed as "**11A**" or "**11B**". In Appendix II (2.11, 2.12) Module 11a and module 11b should be listed with capital A and B as "**11A**" or "**11B**". (Also §2.11a and 2.11b would be easier than 2.11 and 2.12).
response	*Not accepted* Already answered in comment 28 of section B. DRAFT RULES .

comment	*35* comment by: *CAA-NL* In 2.12 title of Module 11B should be in line with Appendix I: MODULE 11B. PISTON AEROPLANE, SAILPLANE AND POWERED SAILPLANE AERODYNAMICS, STRUCTURES AND SYSTEMS
response	*Not accepted*

Sailplanes and powered-sailplanes have been removed from the B3 license. They are part of the L license only.

comment

36 comment by: *CAA-NL*

Suggest to use round numbers for number of question and duration:
2.3
Category A: 20 questions (now 0)
Category B3: 25 questions in 35 minutes. (now 23 in 30 minutes)

2.4
Category B3: 16 questions in 20 minutes. (9 questions is too little; with too little questions, an exam should not be required.)

response

Partially accepted

The correction "Category A: 20 questions (now 0)" (and others) has already been re-introduced in the Opinion 6/2005 aiming at "correcting Editorial changes and inconsistencies", which is currently in Comitology process.
The number of questions has been rounded-up to be multiple of 4, so the 75% limit can be reached.
In item 2.4 (module 4) it is not reasonable to increase the number of questions because the syllabus for the B3 licence has been greatly reduced compared to the B1 licence.

comment

37 comment by: *CAA-NL*

The categories can be listed in a more logic order:
Category A
Category B3
Category B1
Category B2

response

Not accepted

To make the list of categories consistent with alphabetical order and the fact that the L licence is separated from the others, the following order has been adopted:
Category A,
category B1,
category B2,
category B3,
category C
category L.

comment

62 comment by: *Aircraft Engineers International (AEI)*

Page 52 of 106 Appendix II to Part-66 is amended as follows:
Appendix II, **Basic Examination Standard***,* 2. *Question Numbers for the Part-66 Appendix I Modules*
2.17. Subject Module 16 Piston Engine:
Category A-50 multi-choice and 0 essay questions. Time allowed 65 minutes.
Category B1-70 multi-choice and 0 essay questions. Time allowed 90 minutes.
Category B2-None.
Category B3-70 multi-choice and 0 essay questions. Time allowed 90 minutes.

2.18. Subject Module 17 Propeller:
Category A-20 multi-choice and 0 essay questions. Time allowed 25 minutes.

Reason: Changes appear to have been made to the Category A & B1 in the two paragraphs above. This is not part of the ToR of the WG, and unless the previous figures were erroneously entered in the regulation, these changes should be removed from the resulting proposal to the Commission.

response *Not accepted*

The changes have been introduced because by mistake the original text was showing "0" multi-choice question for category A and B and at the same there was a given time to complete the examination. This change was already part of Opinion 06/2005 and is currently under Comitology process for adoption by the Commission.

comment *91* comment by: *Bill Taylor*

I am concerned that the overall examination standard demanded for the B3 licence is unreasonable, given the reduced level of knowledge required for the B3 licence as stated in Appendix 1. For example, if thu compare the number of multiple choice questions required of the B3 to the number required for the B1, the reduction is 22%.

If you look in more detail at Module 11b, there is a total of 28 defined knowledge levels. Of this 28, 17 (or 60%) have a reduced level of knowledge required for the B3 licence examination. However, the the number of questions in the examination is 100 for the B1 compared to 70 for the B3. Given the magnitude of the reduction in the level of knowledge required, the number of questions in this module in particular should be reduced still further. The same situation applies in some of the other modules.

Overall, rather than just a 22% reduction in the number of questions for the B3 licence, I believe that the number should be reduced by a target fiigure of some 40%, which I believe more properly reflects the reduction in level of knowledge required within the syllabus. Clearly, it is important to test such issues as maintenance practices and legislation and I have no disagreement with the number of essay questions.

I strongly urge a review of the content of the Basic Examination Standard with the aim of reducing the number of multiple choice questions for the B3 examination to approximately 60% of the number in the B1 licence examination.

response *Accepted*

The number of questions has been reviewed and the final number is 600 (B1.2) and 448 (B3). This means that the number of questions for the B3 is 75% of that for the B1.2.
However, we note that a further reduction is not reasonable because the number of questions is not related only to the level of training but also to the number of systems. When a particular system is more simple for the B3 licence, the reduction in knowledge required may be larger that the reduction in the number of questions: you still need to ask questions even when the systems are more simple.

comment *166* comment by: *Austro Control*

Page 52 Appendix II (Basic Examination Standard):

Comment:
Number of questions of module 3 is 23; Module 4 contains 9 questions; this result is difficult to comprehend in respect to the examination requirements. It is impossible to follow the 75% rule in an acceptable and fair way.

Proposal:
Calculate the numbers of the required questions as a multiple of 4.

response *Accepted*

The number of questions for the category B3 and L licence have been amended to be multiples of 4, but it is not the intent of the TOR to modify the number of questions in the examination of category A, B1, B2 and C licences. This will be done in CRD 2007-07.

comment *168* comment by: *Austro Control*

Page 52 Appendix II (Basic Examination Standard):

Comment:
Number of questions of module 3 is 23; Module 4 contains 9 questions; this result is difficult to comprehend in respect to the examination requirements. It is impossible to follow the 75% rule in an acceptable and fair way.

Proposal:
Calculate the numbers of the required questions as a multiple of 4.

response *Accepted*

See comment 166.

B. DRAFT RULES - I. Draft Opinion (EC) No 2042/2003 - Part-66: Appendix 4 p. 54

comment *38* comment by: *CAA-NL*

To extend a B3 with subcategory A1 requires 6 month experience, for subcategory A2 this is none. In case of general aviation I assume there is almost no difference in A1 en A2 tasks. If 6 month is required because of the possible use on large aircraft the same should apply to A2 where also large aircraft are present.

(Compromise...both 3 month?)

response *Not accepted*

The Appendix IV shows that 6 months of experience are required when holding a B3 licence and apply to extend to A1. This is due to the difference of aircraft categories: A1 deals with large aircraft but also jet engine aircraft, while the B3 licence deals only with aircraft equipped with piston engines.

No additional experience is required when holding a B3 licence and applying for an extension towards a A2 subcategory, because experience is already gained

on piston engine aircraft, and it has been considered that this experience was enough.

comment

96 comment by: *John Tempest*

To enable industry growth and to encourage personnal development, the ability to extend/upgrade licence priviledges from ELA to B- series licences should be straightforward.

In order to ensure the ability to transition from a Full-ELA to higher-level Maintenance Licences, consideration should be given to extending the matrix at Appendix IV to include an additional row and column entitled Full-ELA.

By definition, the ELA Licence must be seen as a legitimate building-block, should the Lincenced Engineer wish or need to upgrade his qualifications to cater for more complex aircraft.

response

Not accepted

The intention in the rule when creating an L licence was not to allow its upgrade to other categories because of the very different requirements (the L licence has very simplified requirements). This is shown in Appendix IV, in the sentence added:
NOTE: *If a holder of a category L licence wishes to obtain a different category/sub-category, the full basic knowledge and experience requirements for the new category/sub-category must be met and a new licence must be obtained.*

Nevertheless, nothing prevents the Competent Authority from granting credits per 66.A.25(b)

comment

167 comment by: *Austro Control*

Page 52 Appendix II (Basic Examination Standard):

Comment:
Number of questions of module 3 is 23; Module 4 contains 9 questions; this result is difficult to comprehend in respect to the examination requirements. It is impossible to follow the 75% rule in an acceptable and fair way.

Proposal:
Calculate the numbers of the required questions as a multiple of 4.

response

Accepted

See comment 166.

B. DRAFT RULES - I. Draft Opinion (EC) No 2042/2003 - Part-66: Appendix 5 p. 55-58

comment

11 ❖ comment by: *CAA-NL*

Page 15: 66.A.30(a)4. "non large" should be changed into "**other than large**" to be consistent.

Page 55: Application form: change "Non-large" in "Other than large"

response

Accepted

Modified accordingly.

comment

39 comment by: *CAA-NL*

The order in which the Categories are listed should be
A
Basic ELA
Full ELA
B3
B1
B2
C

or having in mind comment 10
A
simple ELA
ELA
B3
B1
B2
C

response

Not accepted

See answer in response to comment 37.

comment

40 comment by: *CAA-NL*

ICAO numbering should be followed:
I Name of State (in bold type);
II Title of licence (in very bold type);
III Serial number of the licence, in arabic numerals, given by the authority issuing the licence;
IV Name of holder in full (in roman alphabet also if script of national language is other than roman);
IVa Date of birth
V Address of holder;
VI Nationality of holder;
VII Signature of holder;
VIII Authority and, where necessary, conditions under which the licence is issued;
IX Certification concerning validity and authorization for holder to exercise privileges appropriate to licence;
X Signature of officer issuing the licence and the date of such issue;
XI Seal or stamp of authority issuing the licence;
XII Ratings, e.g. category, class, type of aircraft, airframe, aerodrome control, etc.;

response

Partially accepted

The differences identified between the AML in EU regulation 2042/2003 and the licence in ICAO Annex 1 has been corrected in the Opinion 6/2005, which proposes to add:

- the missing licence number, given by the authority issuing the licence;
- designation of the authority issuing the licence.

The adoption of this opinion is currently in Comitology process.

comment

108 comment by: *UK CAA*

Comment
The opportunity should be taken to align the part-66 licence with the requirements of ICAO Annex I

Justification
Compliance with ICAO Annex I

Proposed Text
Re-Format EASA Form 26 to align with the requirements of ICAO Annex I

response

Partially accepted

See comment 40 above.

comment

117 comment by: *CAA-NL*

The table introduces a different category C for large aircraft and other than large aircraft. This is not in the rule. to extend a "large aircraft" C with an "other-than-large aircraft" a familiarisation course, now, formally is suffcient.

The table is confusing; what is vertically listed? Skills, systems, kind of aircraft or a mixture.

The sequence should be ELA-A-B3-B1-B2-C

The checkbox in the table for ELA is yet another approach, which adds to the confusion. The difference between the simple and full ELA is comparable to the subcategories. In that light it would be better to have two seperate lines; ELA aircraft simple tasks and ELA aircraft all tasks. If the checkboxes are perferred it could be considered to be placed in the ELA column.

response

Partially accepted

The purpose of modifying the licence (Form 26) by duplicating the lines for category C, was to differentiate the cases where the C rating required different number of years of experience (66.A.30(a)(3) and (4)) whether they are gained on large aircraft paragraph (3) or non large aircraft paragraph (4).

To extend a licence for category C for large aircraft to a category C for non large aircraft, is automatic, because experience on large aircraft include experience on non large aircraft.
However the opposite is not true; and the years of experience on large aircraft are required.

Regarding the list of categories, the list of categories A, B1, B2, B3, L and C has been made as the rule was written. Your views are welcome in case this doesn't fit, with a proposal for a more logic order.

The licence (form 26) for category L has been separated from others.

The checkbox for ELA referred to in the comment has been removed.

comment *123* comment by: *Walter Gessky*

Appendix V to Part 66,
APPLICATION FORM:
Where are the ELA limitations (66A.30(j) notified in the application form?

- ELA limitations should be mentioned under Type endorsement.

Aircraft Maintenance Licence:

Aircraft Maintenance Licence

- Where are the ELA limitations (66A.30(j) notified in the licence? this should be defined.

response *Partially accepted*

Limitations have been removed from 66.A.30(j).

comment *169* comment by: *Austro Control*

Page 58 Appendix V (licence-form):

Comment/Proposal:
The proposed changes contained in Opinion 06/2005 based on NPA/CRD 9/2004 should be taken into account.

response *Not accepted*

An Opinion should normally not take on board changes proposed by another Opinion.

B. DRAFT RULES - I. Draft Opinion (EC) No 2042/2003 - Part-66: new Appendix 6 p. 59-86

comment *42* comment by: *CAA-NL*

Use of modules for ELA training with same numbers but different subject from Appendix I is confusing.

(note: some colons are missing)

response *Accepted*

Appendix VI (becomes Appendix VII) is a new table to present the minimum syllabus for the category L licence. It is separated from the Appendix I because there is no direct access from the L licence towards the B3 licence, and because aircraft are very different. This does not prevent asking for a credit of examination by making a comparison between the syllabi.
Each column of Appendix VI (now VII) represents one rating of the category L licence. They may differ depending on the modules (i.e. modules L10 to L13 are specific to balloons and airships).
In addition, the numbering system for the modules of the L-licence has been changed, all of them starting by "L".

comment	*43* comment by: *CAA-NL* Appendix VI Ratings seems not consistent with 66.A.1.(d); e.g. Balloons and Airships is not a combined rating in 66.A.1(d).
response	*Accepted* The text of Appendix VI (becomes Appendix VII) has been clarified to describe clearly the minimum syllabus per module. A table at the beginning of the Appendix VI (now VII) explains the training modules required for each rating.

comment	*45* comment by: *CAA-NL* Extension (from one category to others) should be considered as well. To go from BM to BD would in module 3 require only 3.7; noise limits. Knowledge requirements should be checked for these issues. Maybe it is better to add noise limits to module 8.
response	*Accepted* Training in "noise levels" has been transferred from Module L3 to Module L8.

comment	*63* comment by: *Aircraft Engineers International (AEI)* Pages 65 to 71 **4. Airframe - Wooden, 5. Airframe - Composite & 6. Airframe - Metal** **Question/Opinion:** In all these knowledge paragraphs the respective Levels for Ratings F.W, F.C and F.M are not specified apart from a few subjects. All the subjects for these Ratings should be at Level 3. **Reason:** As with most aircraft, (and especially sailplanes), even the skin of the aircraft is primary structure. Therefore the engineer should have a high level of knowledge to recognise the inherent danger associated with missed structural problems. Also the other subjects are essential for the "Full" Rated Engineer to have a detailed knowledge about, since he/she after all is "Fully" rated.
response	*Accepted* The intention in the NPA was to list for the Full-L only the training requirements additional to the Limited-L. Nevertheless, because it seems that this created confusion, we have change the Appendix VII to include all the training required for the Full-L. In this case, a person holding a Limited-L shall get credit for such training when applying for Full-L.

comment	*64* comment by: *Aircraft Engineers International (AEI)* Page 72 **7 Airframe General** Paragraphs 7.1, 7.2, 7.3 & 7.7 **Question/Opinion:** Why are F.W, F.C and F.M not required to have knowledge on these extremely important items? Level 3 is required here. **Reason:** Self explanatory
response	*Accepted*

Comment accepted.

comment

65 comment by: *Aircraft Engineers International (AEI)*

Pages 74 to 76 **8 Powerplant** All Paragraphs

Question/Opinion: Why is F.P not required to have knowledge on these extremely important items? Level 3 is required here.

Reason: Self explanatory

response

Not accepted

Training in Powerplant modules L8.1 to L8.13 are already part of basic knowledge required for a Limited-L licence. But when an application to a Full-L is made, the knowledge in paragraph "Powerplant–Advanced" which includes the sub-modules L8.14 to L8.23 is required in addition. Level 3 is not required, because this person is not supposed to carry out an overhaul of an engine.

comment

75 comment by: *Danish Soaring Association*

Duration of training:

Comment:
It seems as a very strict schedule with specification of hours on each item. It seems more reasonable to make sure, that an applicant will achieve proper knowledge during his/hers lessons.

Justification:
Depending on the teacher sufficient knowledge might take more or less hours than required in Appendix VI. An applicant might even have knowledge to a particular subject from another education, and no credit for such knowledge is described in the regulation. Applicants may e.g. have a detailed knowledge to legislation, and it could very well be waste of time spending whole 19 hours with training in a subject he/she is totally familiar with. Other examples could be mentioned.

Proposal:
In Appendix VI after DURATION OF TRAINING should be added: The hours are recommended only.

response

Not accepted

Your consideration is correct; however the system proposed would require to establish a system of credit of training and exams based on existing knowledge.
How could the existing knowledge be evaluated to gain credit? The only acceptable way would be to ask to pass an examination.
The system would be very complex, it is sometimes more practical to ask attending the training again and refresh the knowledge. The durations of training are not excessive.

comment

124 comment by: *Walter Gessky*

Appendix 6 to Part 66:
4.3 add to B.W. Level 2

Justification: B.W. should be able to identify damages.
6.3 add to B.M. level 2
Justification: B.M. should be able to identify damages.

response *Accepted*

Level 2 has been aded to the identification of damages in sub-modules L4.3 and L6.3.

comment *125* comment by: *Walter Gessky*

Appendix VI (ELA training Requirements):
Highly detailed content, very comprehensive, possibly this could become an "overkill" for this type of licence.
Guidance with regard to examination credit with regard to skilled workers might be required.

response *Partially accepted*

Skill workers are in the situation that:
- either they already hold a national licence or an authorisation, in the case where their qualifications if valid prior to entry into force of this Part, this can be converted i.a.w 66.A.70.
In the case of sailplanes, balloons and most airships we propose to introduce in Article 7 of 2042/2003 a provision for a transition period after the adoption of the amendment to the rule where the national qualifications are still valid
- or they hold no qualification, they are then required to attend a course and pass the examination. However when they have knowledge they still may have credit on training according to paragraph 66.A.25(b) in the existing rule.
In addition, an applicant to a Limited-L license may replace the training requirement, but not the examination, by the 2 years experience described in 66.A.30(a)6(ii).

comment *151* comment by: *Graham HALLETT*

Duration of training
The requirement for the specified hours of training is excessive in many cases when applied to the ELA licence for balloons. Most applicants will already hold other qualifications such as pilots licences, engineering degrees, etc. Most of the knowledge the training course seeks to impart will already be known. There must be a method to allow equivalent qualifications or training to count towards the training specified for the ELA licence.

response *Accepted*

The holders of licences who gained basic knowledge through other licences have i.a.w. 66A.25(b) the possibility to be credited on the training for basic knowledge required in Appendix VI (becomes Appendix VII) :
Note: the previous paragraph 66.A.25(b) becomes (d) in the text.

comment *152* comment by: *Deutscher Aero Club e.V. (DAeC)*

Module 4. Airframe
Consultation of our members showed that there are some misunderstandings concerning the combination of modules necessary pursuant to AMC 66.A.25 (b)

This module was drafted[1] with the intention to cover pure wooden airframes and airframes being composed of wooden wings and metal tube fuselages. This was a very common combination from the 40ties up to 60ties. Examples for that are Ka 8, ASK 13, Bergfalke, SF-25, Pa-18.

Therefore a clarification of the wording 'composite' as synonym for a combination of wooden wings and metal tube fuselages seems to be necessary.

[1] module is a translation of DAeC material

response *Accepted*

In module L4. Airframe - Wooden, the sub-title :
L4.1 Airframe - Wooden/Composites has been modified to read :
L4.1 Airframe - Wooden/Combination metal tube and fabric.

In addition in AMC 66.A.25(b) the following paragraph has been added:
For structures made of a combination of metal tube and fabric, the module L4 "Airframe Wooden" should be used as it includes in L4.1 the syllabus of training for such combination.

comment *153* comment by: *Graham HALLETT*

Syllabuses
The syllabuses as laid out are inappropriate for the requirements of certifying staff for balloons and airships. For example, balloons do not have electrical systems. The theory of flight for a balloon can be summed up by the statement: add heat, aircraft goes up, remove heat, aircraft goes down. Module 11 (Procedures of Physical Inspection) would appear to be relevant from the title, but the contents are entirely inappropriate to balloon inspection. If training courses and examinations are to be forced upon us, we must ensure that both are specific to our type of aircraft.

response *Not accepted*

The modules where electrical systems are shown are restricted to:
- 13.13 for winches for tethered gas balloons only (L11.13 in the new issue of rule), and
- 14.5 (12.5 in the new issue) for airships, not to balloons.
Electrical system for airships include batteries and electrical distribution for instruments.

Some Balloons may take an important number of passengers, therefore safety rules are required.

comment *170* comment by: *Austro Control*

Page 59 Appendix VI (ELA training Requirements):

Comment:
The definition of the levels is not clear. Is it the same as for appendix I.

Proposal:
A definition of the levels of training/examination should be established.

response *Accepted*

The first paragraph of Appendix VI (becomes Appendix VII) has been amended to add:
"The levels of knowledge required in this Appendix are described in Appendix I to this Part."

comment *172* comment by: *Austro Control*

Page 66, Appendix VI, ELA training requirements, Module 4.5

Comment:
Some wordings used does not seem to be the adequate aviation wording like: "safeguarding" should be replaced by "safetying", "hood" by "canopy", "coverings" by "fabric", "transparency" by "canopy" or "transparent plastic" "planking" by "skin" "revolution measuring" by "engine speed indicators"
"Execution of planking repair; shanks of" and "shaft exercises" does not have much sense in aviation. Probably "exercises of spliced joints and skin repair" was originally meant.

Proposal:
Review the ELA syllabus and change wording into standard "simplified English" wording commonly used in the General Aviation world.

response *Accepted*

A complete review of Appendix VI has been made to amend uncorrect wording. The Appendix VI becomes Appendix VII.

B. DRAFT RULES - I. Draft Opinion (EC) No 2042/2003 - Part-66: new Appendix 7 p. 87-88

comment *46* comment by: *CAA-NL*

Less than 16 questions is considered too little for an independent examination. (based on the minimum of 16 in Part-66).

response *Noted*

For the determination of number of questions for the B3 and L licences, these have initially been calculated to be proportionate to the number of items in each module and sub-module and to the level of knowledge required and have been rounded up to the nearest multiple of 4. Further review has been carried out to readapt them to the new number of modules.

comment *94* comment by: *John Tempest*

It should be ensured that the level of knowledge required in order to successfully answer the examination questions are commensurate with the reduced level of knowledge required for each subject area as promulgated in the proposed Appendix VI.

This is to ensure that examination authors properly take into account the simplified knowledge requirement applicable to non-complex light aircraft.

response *Accepted*

A sentence has been added in Appendix VII (now Appendix VIII) "Licence category L examination standard" stating:
1.5 The level of knowledge required in the questions must be proportionate to the level of technology of the aircraft in the L category.

comment *154* comment by: *Graham HALLETT*

Exam standard
If examinations are to be forced on us, they must be administered by relevant qualified entities, such as the British Balloon & Airship Club, to ensure their relevance to the aircraft involved.

response *Not accepted*

Qualified Entities is a concept that is still under discussions. As a consequence, it is not possible to use Qualified Entities.
However, nothing prevents a Member State to nominate such a body as Competent Authority (see AMC M.1 in Decision 2008/013/R).
In addition, 66.A.25(c) allows the examination to be performed by a Part-147 organisation, by the competent authority or as approved by the competent authority.

B. DRAFT RULES - I. Draft Opinion (EC) No 2042/2003 - Part-147: 147.A.200 p. 89

comment *171* comment by: *Austro Control*

Page 89 147.A.200 (Approved basic training course) and

- -**Appendix I (Basic training course duration):**

Comment:
See also comment to Page 18 Appendix I: The total duration has been evaluated wit 900h in spite of the fact, that the differences between B3 and B1.2 aren't substantial. So it is difficult to understand a difference in total duration of 1100 h between the syllabi!

Proposal:
An adequate course length should be established.

response *Noted*

See answer responded to comment 165

B. DRAFT RULES - I. Draft Opinion (EC) No 2042/2003 - Part-147: Appendix 1 p. 90

comment *101* comment by: *CAA-NL*

The Duration of the training for the B3 is relatively short, compared with A2 and B1.2. Roughly 1400 hours duration would seem more adequate. Looking at subjects that are now proposed at a lower level than B1.2 the following

submodules seems equally important for the B3 as for the B1.2:

The following submodules should be at the same level for B3 as for B1.2:
Module 2 all submodules
Module 3 (3.2/3.3/3.5/3.6/3.7/3.10)
Module 5 (5.1/5.15)
Module 6 (6.4)
Module 7 (7.4)
Module 8 all submodules
Module 11B (11B.3/11B.5/11B.10/11B.15)
Module 17 (17.6)

response *Noted*

See answer responded to Austrocontrol in comment 165.

B. DRAFT RULES - I. Draft Opinion (EC) No 2042/2003 - Part-147: Appendix 2 p. 91

comment *47* comment by: *CAA-NL*

Use of "class", "Licence categories" and "ratings" in this table remains confusing (not directly related to this NPA).

"T-ELA" should be TELA to be consistent with TB1 etc.
Why does (only) ELA refer to 66.A.1(d)?

The whole T-column could be deleted these codes are not mentioned and explained anywhere.

response *Partially accepted*

The Form 11 has been modified to read:

- in column Ratings: TL
- in colmuumn Limitations:
- SAILPLANES, POWERED SAILPLANES AND AEROPLANES WITH MTOM LESS THAN 1000 KG, BALLOONS, HOT-AIR AIRSHIP, AND MANNED GAS AIRSHIP LISTED IN 66.A.1 (D).

It is not the intent of this TOR to modify the Form 11 on deciding a change to the column RATINGS.

B. DRAFT RULES - I. Draft Decision No 2003/19/RM - AMC to Part-66: new AMC 66.A.1(d) p. 93

comment *72* comment by: *Ian HEY*

Paragraph AMC 66.A.1 (d) states that the three sailplane ratings do not cover the engine. This means that a person wishing to sign off work on a self sustainer sailplane or a SLMG or TMG must have a powerplant rating, which in the case of the self sustainer engine at least, is likely to be a disproportionate qualification, requiring unnecessary learning which may never be used. There should be a means of allowing someone to sign for self sustainer engines and

launch engines in sailplanes without the need for a full engine rating.

Such a rating exists in the UK at present. The current proposals will make gliders with self sustainer engines difficult and expensive to maintain, and may effectively deprive individuals who are currently authorised to sign off self sustainer engines of this privilege, which is not acceptable

response *Not accepted*

A self sustainer sailplane or a SLMG or TMG is a motor-powered sailplane, which is equipped with a powerplant, therefore a licence holder:
-with a Limited-L needs holding the rating "Airframe" in the appropriate category, and the rating "Powerplant",
- with a Full-L needs holding the rating "Aircraft" in the appropriate category.
It is unsafe that certifying staff releasing a motor-powered sailplane has no qualification on the engine.
The licence L has been created to be an easy access. There is no reason that it should deprive individuals. In addition such a licence may be granted by conversion from a national qualification.

comment *112* comment by: *Aero-Club of Switzerland*

The Aero-Club of Switzerland thinks that the exact titles of the privileges have to be defined by the Agency/the Commission for all languages and that no country-unique terms shall be used.

Justification: The german language used in Germany is not identical to the german language used in Austria or in Switzerland. Very often, three different terms have the same meaning (e.g. Anlieger, Anrainer, Anstösser for someone whose piece of land touching another one's). Swiss Technical Manuals written in german are not always understood in the other german speaking countries.

response *Noted*

Although your comment finds justification, EASA is not tasked to ensure the translations. The translation in the national languages of the EU Member States is made by a service of the Commission.

B. DRAFT RULES - I. Draft Decision No 2003/19/RM - AMC to Part-66: new AMC 66.A.25(b) p. 93

comment *152* ❖ comment by: *Deutscher Aero Club e.V. (DAeC)*

Module 4. Airframe
Consultation of our members showed that there are some misunderstandings concerning the combination of modules necessary pursuant to AMC 66.A.25 (b)

This module was drafted[1] with the intention to cover pure wooden airframes and airframes being composed of wooden wings and metal tube fuselages. This was a very common combination from the 40ties up to 60ties. Examples for that are Ka 8, ASK 13, Bergfalke, SF-25, Pa-18.

Therefore a clarification of the wording 'composite' as synonym for a combination of wooden wings and metal tube fuselages seems to be necessary.

	[1] module is a translation of DAeC material
response	*Accepted* In module L4. Airframe - Wooden, the sub-title : **L4.1 Airframe - Wooden/Composites** has been modified to read : **L4.1 Airframe - Wooden/Combination metal tube and fabric.** In addition in AMC 66.A.25(b) the following paragraph has been added: For structures made of a combination of metal tube and fabric, the module L4 "Airframe Wooden" should be used as it includes in L4.1 the syllabus of training for such combination.

B. DRAFT RULES - I. Draft Decision No 2003/19/RM - AMC to Part-66: new AMC 66.A.30(a)6, 7 and 8 p. 93

comment	*114* comment by: *Aero-Club of Switzerland* We are happy to see, that experience can be gained on a full-time or on a part-time basis as well as on a professional or on a voluntary basis. What will be your record-keeping proposals to the organitions to enable them to see that really all was well done?
response	*Noted* The AMC to 66.A.30(a)6 & 7 provides for the use of a records or of a log-book. Any recording system meeting this AMC meets the intent of the rule. Also the AMC 66.A.20(b)(2), as amended by Decision 2007/018/R, clarifies how the recording of experience of maintenance can be demonstrated with regard to the 6 months experience. Any recording system meeting this AMC meets the intent of the rule.

comment	*126* comment by: *Walter Gessky* **AMC 66.A.30(a)6, 7 and 8, page 93** AMC or guidance with regard to definition of part-time/voluntary experience is required.
response	*Noted* See answer made to Austrocontrol in comment 173.

comment	*157* comment by: *Deutscher Aero Club e.V. (DAeC)* The Appendix II may have to be adapted to typical tasks covered by Basic-ELA and Full-ELA licences. Especially maintenance tasks for balloons are not covered.
response	*Accepted* The Appendix II related to typical maintenance experience tasks has been amended to include sailplanes, balloons and airships.

comment	*173* comment by: *Austro Control*

Page 93 AMC66.A.30 (a) 6,7,8 (experience requirements)

Comment:
There is currently no definition of the exact meaning of the wording part-time - does it mean 50 percent employed, 40 percent employed, etc..? In addition to that what is exactly meant by voluntary basis?

Proposal:
Exact definitions should be added to avoid different interpretations between the MS - as it is often seen.

response

Not accepted

The statement made that:
- "experience may be gained on full-time or part-time" has been removed,
- "experience may be gained as a professional or on voluntary basis" relates to whether the person receives a compensation or not and the Agency believes that it is self-explanatory..
The duration of experience is not linked to these concepts and therefore need not being explained more in detail.

B. DRAFT RULES - I. Draft Decision No 2003/19/RM - GM to Part-66: GM 66.A.20(a) p. 95

comment

66 comment by: *Aircraft Engineers International (AEI)*

Page 95 **C) Draft Decision GM to Part-66**, The second paragraph GM.A.20(a) is amended as follows:
GM 66.A.20(a)Privileges
...
3. The category B1, B3 and ELA licences also permits the certification of work involving avionic
systems, providing the serviceability of the system can be established by a simple self-test
facility, other on-board test systems/equipment or by simple ramp test equipment. Defect
rectification involving test equipment which requires an element of decision making in its
application - other than a simple go/no-go decision - cannot be certified. The categories~~y~~ B2
and B3 will need to be qualified as category A in order to carry out simple mechanical tasks
and be able to make certifications for such work.

Question/Opinion: Why should a Cat. B3 Certifying Staff (CS) have to qualify as a Cat. A? Delete "and B3".

Reason: A B3 CS holds the "Mechanical" (Airframe, Systems, and Powerplant/Engine) rating already. This more than covers the simple "Mechanical" task rating for a Cat. A CS!

response

Not accepted

GM 66.A.20(a)2 has been modified as follows:

4. The category B3 licence does not include any A subcategory. In addition, the category B3 license does not include the category L, although this does not prevent the B3 licence holder from working on non-pressurised piston aeroplanes with MTOM of less than 1000 Kg.

The reason for not including any A subcategory is the following:

- A1: The B3 licence does not cover large aircraft nor turbine engines.
- A2: The B3 licence does not cover large aircraft.
- A3: The B3 licence does not cover helicopters nor turbine engines.
- A4: The B3 licence does not cover helicopters.

comment

110 comment by: *UK CAA*

Comment
The term 'Mechanic' when used for the category 'A' licence restricts the holder to the certification of work they have personally performed. There is no such restriction in the proposed Part 66.A.20 (a) 5 for the ELA category, therefore the use of the term 'ELA maintenance certifying mechanic' is not consistent with the other licence categories.

Justification
Consistency of the regulation.

Proposed Text
ELA maintenance certifying technician

response

Accepted

Corrected accordingly

comment

111 comment by: *UK CAA*

Comment
The last sentence in this paragraph states 'The categories B2 and B3 will need to be qualified as category A in order to carry out simple mechanical tasks and be able to make certifications for such work.

The B3 category is a mechanical licence and therefore simple mechanical tasks can be carried out within the scope of the licence I.E. sailplanes, powered sailplanes and piston-engine non-pressurized aeroplanes of 2000 Kg MTOM and below.

As the privileges of a category A licence holder are restricted to specific tasks they have been trained and assessed competent to carry out, the privileges of a category A licence should be included in the B3.

Justification
With the exception of module 5 basic computer software and module 11 wastewater, the basic knowledge requirements for a B3 licence as detailed in the proposed revised text to Appendix 1, are either equal to or exceed those of a category A licence.

response

Not accepted

The new Appendix I proposed in the CRD has some modules (7, 9, 11B and 17) where the training for the B3 licence is proportional to the technology existing in these type of aeroplanes (non-pressurised under 2000 Kg MTOM), even if the subject is the same and the level of training is the same.
As a consequence, the training for the B3 licence does not cover technology typical of larger and more complex aircraft, which is required for the A licence.

See also reply to comment 66.

comment *118* comment by: *G.C. Valdonio, AOPA Italia*

The general rationale of lowering the excessively demanding qualifications required by the present rules for light non-complex aircraft is certainly positive. The following observations should be noted:

- Licence category B3: the overall qualification level proposed for this licence, and the experience requirements proposed, appear balanced and reasonable, and are a good demonstration of the excessive level of the qualifications presently required by Part M. But the proposal of the additional "category ELA" , addressing the Continuous Airworthiness of the aircraft up to 1000 kg, shows that these requirements should be lowered even further, as detailed in the following considerations.

- Licence Category ELA: apart from the fact that the ELA aircraft category is still not completely defined and not yet approved nor accepted by EASA, we do not agree in having yet another sub-category limited to 1000 kg aircraft, which do not constitute a large component of the European GA fleet (whose most common aircraft are the Cessna 172/182 and Piper PA-28 families, which have a MTOW in excess of 1000kg). There is no technical reason to differentiate a 1000 kg aircraft from a 2000 kg one, and the future distinction between ELA1 and ELA2 categories should in our view be totally abolished, unifying the two sub-categories in just one ELA category.
In our view, the ELA category should be only one, i.e. up to 2000 kg. Introducing a lower sub-category, such as the 1000 kg ELA1, would have the negative effect of forcing the market towards underpowered and marginally equipped three-four-seaters, which would end up being used frequently overweight, or flown with inadequate fuel reserves. Past experience shows that a well balanced four-seater should have a MTOW in the region of 1200 kg.

Therefore, the new licences should be revised as follows:

- New licence "FULL ELA", with the privileges of the proposed "Full ELA" in the NPA, up to 2000 kg MTOW;
- New licence "BASIC ELA", with the privileges of the proposed "Basic ELA", but extended to 2000 kg MTOW.
- The training, experience and qualification requirements should be the same as those specified for the NPA "Category ELA" licences.

At this point, the licence B3 appears to be useless and its implementation could be eliminated.

response *Not accepted*

The question of defining aircraft processes ELA 1 and ELA2 are not the subject of this working group, but more the subject of group MDM.032.

The text has been changed regarding the aircraft covered by the B3 licence and those covered by the L licence:

- the B3 licence applies to non-pressurized piston engine aeroplanes of MTOM 2000Kg and less,
- the L licence to:
  - Sailplanes, powered sailplanes and aeroplanes with MTOM less than 1000 Kg
  - Balloons
  - A hot-air airship
  - A manned gas airship meeting all the following elements:
    - (i) 3% maximum static heaviness
    - (ii) Non vectored thrust (except reverse thrust)
    - (iii) Conventional and simple design of:
      - Structure
      - Control system
      - Ballonet system
    - (iv) Non power-assisted controls

This means that sailplanes, balloons and airships are covered only by the L-licence.

The initial intent of the task was to create a B3 licence for "Light aircraft" and further work of the group identified a need to have a licence only aircraft as described here above.
This L licence aims at replacing the national licences for sailplanes and balloons.

comment *155* comment by: *Graham HALLETT*

GM 66.A.20 a.
The title ELA maintenance certifying mechanic demonstrates the failure to appreciate that balloons are different from aeroplanes. Since the majority of the structure is fabric, requiring sewing, and wicker, requiring basket weaving the word mechanic is inappropriate. Technician or engineer would be better.

response *Accepted*

Corrected accordingly. Now it shows "technician".

B. DRAFT RULES - I. Draft Decision No 2003/19/RM - GM to Part-66: GM 66.B.200 p. 96

comment *161* comment by: *DGAC France*

Proposed text/comment

(c) Basic examinations shall follow the standard specified in Appendix I and II to this Part **for category A, B1, B2, B3 and Appendix VI and VII for category ELA.**
Justification:

Due to the creation of the ELA training syllabus and examination standard in the new Appendix 6 and 7 of Part-66, the competent authority should refer to these Appendixes for an ELA applicant.

response *Accepted*

Assuming that the comment is related to 66.B.200 and not the GM to this paragraph, 66.B.200 is modified accordingly.

C. ATTACHMENTS - Regulatory Impact Assessment p. 97-106

comment *2* comment by: *Premiair Aircraft Engineering*

Attachment 1, Regulatory Impact Assessment
2. Options
Towards the bottom of page 97 of the NPA is the statement 'rotorcraft was kept outside the scope of the licence due to their higher complexity'.
On what information was this statement based? Are there reliable statistics to indicate that accidents/incidents based on maintenance issues connected with complexity are higher on light single piston engined helicopters than on light single piston engined fixed wing aircraft?

The community of light helicopter operators and maintainers face exactly the same problems as the light fixed wing community, i.e. lack of young technicians willing to work for low pay, increasing shortage of older Part-66 licence holders, losing licence holders to larger organisations etc. IF there is to be a 'B3' licence, and IF rotorcraft are to be excluded, then there MUST be evidential justification for this, not just a one line statement of opinion from the working group.

If the NPA were to be accepted with rotorcraft excluded, the rotorcraft community would continue under exactly the same pressures as previously, whist the fixed wing community would have their burdens eased. In fact, it would make light rotorcraft maintenance a less attractive proposition to newcomers, as it would be much easier to become fully qualified over the road in the fixed wing hangar. This is clearly not fair.

Were there any representatives of the rotorcraft community on the working group?

My suggested alteration to the text of the NPA is to include all single piston engined rotorcraft of 2000kg MTOW or below.

response *Not accepted*

The Agency is currently involved in a task called 66.009 on "type rating and group ratings" where the case of rotorcraft was considered. The issue was to evaluate whether an helicopter type rating could be granted for helicopters without rendering mandatory a type training, which means giving the possibility for licence holders for helicopters to be granted a rating based on examinations only instead of a training.

With this aim in view, personnel from Eurocopter were invited to be part of the group to represent the helicopter manufacturers views. Their position was that piston-engined rotorcraft of any mass should not be in the scope of Part-66 licences other than B1.4, and other than with ratings based on type training. Strong technical reasons on the design of helicopters moveable components were provided to sustain their position, which was supported by the group and the Agency.
In addition, the group was composed of associations representing various flying and maintenance activities which are knowledgeable in helicopter flying

and maintenance activities.

Finally, your proposal to include certain categories of rotorcraft within the B3 licence would mean to increase the syllabus of the B3 licence to cover both aeroplanes and helicopters, which would be mandatory for every applicant.

comment *48* comment by: *CAA-NL*

A consideration for the use of Avionic license for smaller aircraft could be that a shortage of Avionic engineers in general aviation can be anticipated, what will lead to B3 License holders performing more (too much) Avionic tasks.

response *Partially accepted*

B1.2 and B3 personnel are (will be) limited to tasks defined in their privilege in 66.A.20.
The question of extending and re-adapting the B2 licence to general aviation is currently envisaged by the Agency, and a new task 66.027 has been created.

comment *49* comment by: *CAA-NL*

Page 100 (following "the 66.022...") refers to received feedback. Is this feedback available for other national authorities?

response *Noted*

Feedback originates from:
- information provided by the members of the group,

- deviations declared by Member States in case of non-compliance to ICAO Annex 1,
- information collected from standardisation Directorate on national regulations,
- experience of the Agency members on national regulations. Feedback is not collected in a data bank.

comment *50* comment by: *CAA-NL*

Page 102 under option a2. If the cost of general aviation are reduced and usages increases then it is even likely that more - not yet experienced - pilots are starting to fly. Which will not increase safety.

response *Noted*

The tendency mentioned in the comment should be covered by training ensured by pilot training schools.
However the Agency thinks that if costs in general aviation are reduced, then pilots will fly possibly more which increases their experience, improving safety.

comment *51* comment by: *CAA-NL*

page 103

Environmental impact
If NPA leads to greater usage of GA aircraft then pollution will increase.

Social impact
NPA facilitates airsports which is appreciated by many.

response *Noted*

This is right, however the effects on environment are negligible. The social aspect has been already covered with the impact on work employment, which covers the possible social effects if the public appreciates better the airsports.

comment *129* comment by: *Lasham gliding society*

It APPEARS THAT THE RIGHTS OF NATIONAL LICENCE HOLDERS TO BE GRANTED A NEW LICENCE ON THE STRENGTH OF THERE OLD LICENCE AND THE LEVEL OF EXPERANCE HAS BEEN IGNORED.SO IT WOULD APPEAR THAT MY 15 YEARS OF EXPERANCE MAINTAINING AND REPAIRING SAILPLANES AND MOTORGLIDERS WILL COUNT FOR VERY LITTLE. tHE SUGESTED LEVEL OF SUTDY TIME WILL DETUR THE MAJORITY OF bRITISH GLIDING ASSOCATION INSPECTORS FROM CARRYING ON IN WHAT IS FOR THE MOST PART A NON PROFECIONAL ROLE

response *Accepted*

Conversion of certifying staff qualifications valid in a Member State prior to entry into force of this Part can be performed in accordance with 66.A.70.
In the case of sailplanes, balloons and most airships we propose to introduce in Article 7 of 2042/2003 a provision for a transition period after the adoption of the amendment to the rule where the national qualifications are still valid.

comment *146* comment by: *Chairman Technical Committee British Balloon and Airship Club*

We cannot fully comment on the impact of the proposed licencing for engineers in relation to ballooning as we do not have a complete picture of the proposals. There is, for example, no real differentiation between the Full and Basic licence. There is no reference to anything other than basic repairs. In the case of gas and hot air balloons the proposed licencing is too broad and too complicated in relation to present practise and will be both extremely costly and time consuming to both implement and monitor for all parties. In an ideal EASA world we would propose that balloons we are exempted from ELA1 and ELA2 however, if EASA intend to pursue licencing for balloon engineers then we would strongly recommend that further study and understanding of our requirements are sought. As the proposals stand it is most likely that a fair percentage of our existing inspectors will choose to retire rather than jump through what many perceive as yet more unnecessary bureaucratic hoops that do nothing to improve an already unblemished record.

Chris Dunkley
Chairman Technical Committee
British Balloon and Airship Club

response *Noted*

The basic regulation 216/2008 does not provide for exempting balloons.

Several opportunities in the text are provided which alleviate the burden:

- conversion of existing qualifications as per current 66.A.70,
- possibility of credit on exams as per 66.A.25(b) (current text),
- for the application to the Limited-L license, replacement of the required training by 2 years of experience as per 66.A.25(c) (new text),
- in the case of sailplanes, balloons and most airships we propose to introduce in Article 7 of 2042/2003 a provision for a transition period after the adoption of the amendment to the rule where the national qualifications are still valid.

comment *156* comment by: *Graham HALLETT*

Option c2 of RIA.
It states here that 'basic knowledge training and examination adapted to the size and mass of the aircraft'.
Once again this demonstrates the inability to grasp the basic truth that **balloons** are **different** from **aeroplanes**. Surely the training and examination should be adapted to the **TYPE** of aircraft

response *Noted*

In the particular case of balloons, and because the Agency understands its difference with respect to other type of aircraft, the L-licence has been set-up in order to cover all balloons, independently of size or mass (see 66.A.1(d)).

Appendix A - Resulting text after the CRD

I. Draft Opinion (EC) No 2042/2003

In Article 7 the following paragraphs 7 and 8 are added:

…

Article 7

Entry into force

…

7. Reserved.

8. By way of derogation from paragraph 1, for sailplanes, powered-sailplanes and balloons, and for those airships covered by the L licence in accordance with 66.A.1(d), certifying staff may continue to be qualified in accordance with the relevant Member State regulation until **(INCLUDE DATE 3 YEARS AFTER ENTRY INTO FORCE OF THIS AMENDMENT)**.

A) Draft Opinion on Part-145

Commission Regulation (EC) 2042/2003 Annex II (Part-145) is hereby amended as follows:

Point 145.A.30 is amended as follows:

145.A.30 Personnel requirements

…

(f) The organisation 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 paragraph those personnel specified in paragraph (g) and (h)(1) and (h)(2), qualified in Part-66 category B1 or B3 may carry out and/or control colour contrast dye penetrant tests.

(g) Any organisation maintaining aircraft, except where stated otherwise in paragraph (j), shall in the case of aircraft line maintenance, have appropriate aircraft ~~type~~ rated certifying staff qualified as category B1, ~~and~~ B2, B3 and/or L, as appropriate, in accordance with Part-66 and 145.A.35.

In addition such organisations may also use appropriately task trained certifying staff qualified as category A in accordance with Part-66 and 145.A.35 to carry out minor scheduled line maintenance and simple defect rectification. The availability of such category A certifying staff shall not replace the need for Part-66 category B1, ~~and~~ B2 and/or B3 certifying staff, as appropriate, to support the category A certifying staff. However, such Part-66 category B1, ~~and~~ B2 and/or B3 staff need not always be present at the line station during minor scheduled line maintenance or simple defect rectification.

(h) Any organisation maintaining aircraft, except where stated otherwise in paragraph (j) shall:

…

2. in the case of base maintenance of aircraft other than large aircraft have either:

(i) appropriate aircraft ~~type~~ rated certifying staff qualified as category B1, ~~and~~ B2, B3 and/or L, as appropriate, in accordance with Part-66 and 145.A.35 or,

(ii) appropriate aircraft ~~type~~ rated certifying staff qualified in category C assisted by B1, ~~and~~ B2, B3 and/or L support staff, as appropriate, as specified in paragraph (1).

…

Point 145.A.35 is amended as follows:

145.A.35 Certifying staff and category B1, ~~and~~ B2, B3 and L support staff

(a) In addition to the appropriate requirements of 145.A.30(g) and (h), the organisation shall ensure that certifying staff and category B1, ~~and~~ B2, B3 and L support staff have an adequate understanding of the relevant aircraft and/or components to be maintained together with the associated organisation procedures. In the case of certifying staff, this must be accomplished before the issue or re-issue of the certification authorisation.

'Category B1, ~~and~~ B2, B3 and L support staff' means those category B1, ~~and~~ B2, B3 and L staff in the base maintenance environment who do not hold necessarily certification privileges. 'Relevant aircraft and/or components', means those aircraft or components specified in the particular certification authorisation. 'Certification authorisation' means the authorisation issued to certifying staff by the organisation and which specifies the fact that they may sign certificates of release to service within the limitations stated in such authorisation on behalf of the approved organisation.

(b) …

(c) The organisation shall ensure that all certifying staff and category B1, ~~and~~ B2, B3 and L 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 paragraph '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 authorisation and/or has actually carried out maintenance on at least some of the aircraft type systems specified in the particular certification authorisation.

(d) The organisation shall ensure that all certifying staff and category B1, ~~and~~ B2, B3 and L support staff receive sufficient continuation training in each two year period to ensure that such staff has up-to-date knowledge of relevant technology, organisation procedures and human factor issues.

(e) The organisation shall establish a programme for continuation training for certifying staff and category B1, ~~and~~ B2, B3 and L support staff, including a procedure to ensure compliance with the relevant paragraphs of 145.A.35 as the basis for issuing certification authorisations under this Part to certifying staff, and a procedure to ensure compliance with Part 66.

(f) …

(g) …

(h) …

(i) …

(j) The organisation shall maintain a record of all certifying staff and category B1, ~~and~~ B2, B3 and L support staff.

The staff records shall contain:

1. details of any aircraft maintenance licence held under Part-66;

2. all relevant training completed

3. the scope of the certification authorisations issued, where relevant, and

4. particulars of staff with limited or one-off certification authorisations.

The organisation shall retain the record for at least two years after the certifying staff or B1, ~~or~~ B2, B3 or L support staff has ceased employment with the organisation or as soon as the authorisation has been withdrawn. In addition, upon request, the maintenance organisation shall furnish certifying staff with a copy of their record on leaving the organisation.

The certifying staff shall be given access on request to their personal records as detailed above.

(k) …

(l) …

(m) The minimum age for certifying staff and category B1, ~~and~~ B2, B3 and L support staff is 21 years.

Point 145.A.70 is amended as follows:

145.A.70 Maintenance organisation exposition

(a) «Maintenance organisation exposition» means the document or documents …

…

6. a list of certifying staff and B1, ~~and~~ B2, B3 and L support staff;

…

B) Draft Opinion on PART-66

Commission Regulation (EC) No 2042/2003 Annex III (Part 66) is hereby amended as follows:

The title of Section A, Subpart A is amended as follows:

SECTION A

SUBPART A

AIRCRAFT MAINTENANCE LICENCE ~~AEROPLANES AND HELICOPTERS~~

Point 66.A.1 is amended as follows:

66.A.1 Scope

(a) This section establishes the requirements for the issue of an aircraft maintenance licence and conditions of its validity and use, within ~~for aeroplanes and helicopters of~~ the following categories:

— Category A

— Category B1

— Category B2

— Category B3

— Category C

— Category L

(b) Categories A and B1 are subdivided into subcategories relative to combinations of aeroplanes, helicopters, turbine and piston engines. The subcategories are:

— A1 and B1.1 Aeroplanes Turbine

— A2 and B1.2 Aeroplanes Piston

— A3 and B1.3 Helicopters Turbine

— A4 and B1.4 Helicopters Piston

(c) Category B3 is applicable to piston-engine non-pressurized aeroplanes of 2000 Kg MTOM and below;

(d) Category L is applicable to any of the following aircraft:

- Sailplanes, powered sailplanes and aeroplanes with MTOM less than 1000 Kg
- Balloons
- Hot-air airships
- Manned gas airships meeting all the following elements:
  - (i) 3% maximum static heaviness
  - (ii) Non vectored thrust (except reverse thrust)
  - (iii) Conventional and simple design of:
    - Structure
    - Control system
    - Ballonet system
  - (iv) Non power-assisted controls

Category L is subdivided into the following levels:

— Limited-L

— Full-L

Each one of these levels is further divided in the following ratings:

— Ratings for the Limited-L licence:

- Wooden airframe
- Composite airframe
- Metal airframe
- Powerplant
- Hot air Balloons
- Gas Balloons
- Hot air Airships
- Gas Airships

— Ratings for the Full-L licence:

- Wooden aircraft
- Composite aircraft
- Metal aircraft
- Wooden sailplanes
- Composite sailplanes
- Metal sailplanes
- Hot air Balloons
- Gas Balloons
- Hot air Airships
- Gas Airships
- Radio-Comm/Transponder

The levels and ratings described above shall be endorsed on the Part-66 aircraft maintenance licence, as applicable.

Point 66.A.20 is amended as follows:

66.A.20 Privileges

(a) Subject to compliance with paragraph (b), the following privileges shall apply:

1. …
2. ….
3. …
4. A category B3 aircraft maintenance licence shall permit the holder to issue certificates of release to service following maintenance, including aeroplane structure, powerplant and mechanical and electrical systems. Work on avionic systems requiring simple tests to prove their serviceability shall also be included in the privileges. Troubleshooting on avionic systems is not allowed.
5. A category L aircraft maintenance licence shall permit the holder the following:
   - For the Limited-L licence:
     - For the "powerplant" rating: issue certificates of release to service following maintenance on the powerplant.
     - For all the other ratings: issue certificates of release to service following maintenance on aircraft structure, mechanical and electrical systems as well as maintenance on avionic systems not requiring troubleshooting and requiring simple tests to prove their serviceability.
   - For the Full-L licence:
     - For the "Radio-Comm/Transponder" rating: issue certificates of release to service following maintenance on radio, communication and transponder systems.
     - For all the other ratings: issue certificates of release to service following maintenance on aircraft structure, powerplant, mechanical and electrical systems as well as work on avionic systems not requiring troubleshooting and requiring simple tests to prove their serviceability.

   The Limited-L aircraft maintenance licence does not allow the release of complete aircraft after annual inspections or equivalent or after implementation of major repairs and modifications. These

are privileges of the Full-L aircraft maintenance licence holder.

The Full-L licence shall automatically include the Limited-L licence.

~~4.~~ 6. …

(b) …

Point 66.A.25 is amended as follows:

66.A.25 Basic knowledge requirements

(a) An applicant for an aircraft maintenance licence, other than an L licence, or the addition of a category or subcategory to such an aircraft maintenance licence shall demonstrate, by examination, a level of knowledge in the appropriate subject modules in accordance with Appendix I to this Part.

The basic knowledge examinations shall be conducted by a training organisation appropriately approved under Part-147 or by the competent authority.

(b) An applicant for an L aircraft maintenance licence shall comply with the basic training and examination requirements described in Appendixes VII and VIII to this Part. Basic training courses shall be conducted by appropriately approved Part-147 maintenance training organisations or as approved by the competent authority. Examinations shall be conducted by appropriately approved Part-147 maintenance training organisations, by the competent authority or as approved by the competent authority.

(c) By derogation to paragraph (b), an applicant for a Limited-L aircraft maintenance license may replace the training requirements of paragraph (b) by the experience requirements described in 66.A.30(a)6(ii). Examination in accordance with 66.A.25(b) is still required.

~~(b)~~ (d) …

Point 66.A.30 is amended as follows:

66.A.30 Experience requirements

(a) An applicant for an aircraft maintenance licence shall have acquired:

1. for category A, ~~and~~ subcategories B1.2 and B1.4 and category B3:

   (i) three years of practical maintenance experience on operating aircraft, if the applicant has no previous relevant technical training; or

   (ii) 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

   (iii) one year of practical maintenance experience on operating aircraft and completion of a Part-147 approved basic training course.

2. …

3. …

4. for category C with respect to ~~non large~~ other than large aircraft:

   three years of experience exercising category B1 or ~~B.2~~ B2 privileges on ~~non large~~ other than large aircraft or as Part-145 B1 or ~~B.2~~ B2 support staff, or a combination of both; or

5. …

6. for Limited-L, a sufficient period of time of practical experience covering a representative cross-section of maintenance activities relevant to the ratings applied for. This period shall not be less than:

   (i) six months for applicants qualified under 66.A.25(b).

(ii) one year for applicants qualified under 66.A.25(c).

7. for Full-L, one year of experience exercising the Limited-L privileges covering a representative cross-section of maintenance activities in the corresponding rating, except that for the inclusion of an additional rating on an existing Full-L licence it is only required the completion of the corresponding training and examination in accordance with Appendixes VII and VIII and the practical experience required in paragraph 6 above.

b) …

(c) For category A, B1, ~~and~~ B2 and B3 the experience must be practical which means being involved with a representative cross section of maintenance tasks on aircraft.

(d) …

(e) …

New points 66.A.45(i) and 66.a.45(j) are added as follows:

…

(i) The holder of a category B3 aircraft maintenance licence may only exercise certification privileges when the aircraft maintenance licence has been endorsed with the rating *"piston-engine non-pressurized aeroplanes of 2000 Kg MTOM and below"*. This rating shall be granted following demonstration of practical experience which shall include a representative cross-section of maintenance activities relevant to the licence category.

Unless the applicant provides evidence of appropriate experience, the rating granted shall be subject to the following limitations, which shall be endorsed on the licence:

- wooden structure aircraft,
- aircraft with metal tubing structure covered with fabric,
- metal structure aircraft,
- composite structure aircraft.

These limitations are exclusions from the certification privileges and affect the aeroplane in its entirety. Nevertheless, the holder of a B3 licence is also entitled to issue certificates of release to service for M.A.803(b) Pilot-owner maintenance tasks on piston-engine non-pressurized aeroplanes of 2000 Kg MTOM and below, regardless of the limitations endorsed on the licence.

Limitations shall be removed following demonstration of appropriate experience or after having successfully completed training and examination at a Part-147 approved organisation or as approved by the competent authority. The examination may also be conducted by the Competent Authority.

(j) The holder of a category L aircraft maintenance licence may only exercise certification privileges when the aircraft maintenance licence has been endorsed with the appropriate ratings described in 66.A.1(d).

Point 66.A.100 is amended as follows:

66.A.100 General

~~Until such time as this Part specifies a requirement for certifying staff of aircraft other than aeroplanes and helicopters, the relevant Member State regulation shall apply.~~

For those airships not covered by the L licence in accordance with 66.A.1(d), the relevant Member State

regulation shall apply.

Point 66.B.100 is amended as follows:

66.B.100 Procedure for the issue of an aircraft maintenance licence by the competent authority

...

(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 applicable Appendix I or VII have been met as required by this Part.

...

Point 66.B.110 is amended as follows:

66.B.110 Procedure for the amendment of an aircraft maintenance licence to include an additional basic category or subcategory or level

(a) In addition to the documents required under 66.B.100 or 66.B.105, as appropriate, the applicant for additional basic categories or subcategories to an aircraft maintenance licence or for a change of level for an L licence, shall submit his/her current original aircraft maintenance licence to the competent authority together with EASA Form 19.

(b) At the completion of the procedure as specified in 66.B.100 or 66.B.105, the competent authority shall endorse the additional basic category or subcategory or level on the aircraft maintenance licence by stamp and signature or reissue the licence. The competent authority file shall be amended accordingly.

…

Point 66.B.115 is amended as follows:

66.B.115 Procedure for the amendment of an aircraft maintenance licence to include an aircraft ~~type or group~~ rating

On receipt of a satisfactory EASA Form 19 and any supporting documentation demonstrating compliance with the requirements of the applicable ~~type~~ rating ~~and/or group rating requirements~~ ~~and~~ together with the accompanying aircraft maintenance licence, the competent authority shall either endorse the applicant's aircraft maintenance licence with the applicable aircraft ~~type or group~~ rating or reissue the said licence to include the applicable aircraft ~~type or group~~ rating. The competent authority file shall be amended accordingly.

Point 66.B.200 is amended as follows:

66.B.200 Examination by the competent authority

…

(c) Basic examinations shall follow the standard specified in Appendix I and II to this Part for category A, B1, B2, B3 and Appendix VII and VIII for category L.

…

Point 66.B.405 is amended as follows:

66.B.405 Examination credit report

(a) For each technical qualification concerned the report shall identify the subject matter and knowledge levels contained in the applicable Appendix I or VII to this Part relevant to the particular category being compared.

...
(c) Based upon paragraph (b) comparison, the report shall indicate for each technical qualification concerned the Appendix I or VII subject matters subject to examination credits.

…

Appendix I to Part-66 is amended as follows:

Appendix I

Basic knowledge requirements

1. KNOWLEDGE LEVELS – CATEGORY A, B1, B2, B3 AND C AIRCRAFT MAINTENANCE LICENCE

Basic knowledge for categories A, B1, ~~and~~ B2 and B3 are indicated by the allocation of knowledge levels indicators (1, 2 or 3) against each applicable subject. Category C applicants must meet either the category B1 or the category B2 basic knowledge levels.

…

2. MODULARISATION

Qualification on basic subjects for each Part-66 aircraft maintenance licence category or subcategory should be in accordance with the following matrix. Applicable subjects are indicated by an 'X':

Subject module	A or B1 aeroplane with:		A or B1 helicopter with:		B2	B3
	Turbine engine(s)	Piston engine(s)	Turbine engine(s)	Piston engine(s)	Avionics	Non pressurized piston engine aeroplanes of 2T MTOM and less
1	X	X	X	X	X	X
2	X	X	X	X	X	X
3	X	X	X	X	X	X
4	X	X	X	X	X	X
5	X	X	X	X	X	X
6	X	X	X	X	X	X
7	X	X	X	X	X	X
8	X	X	X	X	X	X
9	X	X	X	X	X	X
10	X	X	X	X	X	X
11	X	X				X
12			X	X		
13					X	

14					X	
15	X		X			
16		X		X		X
17	X	X				X

MODULE 1. MATHEMATICS

	LEVEL			
	A	B1	B2	B3
1.1 Arithmetic	1	2	2	2
Arithmetical terms and signs, methods of multiplication and division, fractions and decimals, factors and multiples, weights, measures and conversion factors, ratio and proportion, averages and percentages, areas and volumes, squares, cubes, square and cube roots.				
1.2 Algebra				
(a)	1	2	2	2
Evaluating simple algebraic expressions, addition, subtraction, multiplication and division, use of brackets, simple algebraic fractions;				
(b)	-	1	1	1
Linear equations and their solutions;				
Indices and powers, negative and fractional indices;				
Binary and other applicable numbering systems;				
Simultaneous equations and second degree equations with one unknown;				
Logarithms;				
1.3 Geometry				
(a)	-	1	1	1
Simple geometrical constructions;				
(b)	2	2	2	2
Graphical representation; nature and uses of graphs, graphs of equations/functions;				
(c)	-	2	2	2
Simple trigonometry; trigonometrical relationships, use of tables and rectangular and polar coordinates.				

MODULE 2. PHYSICS

LEVEL

	A	B1	B2	B3
2.1 Matter	1	1	1	1
Nature of matter: the chemical elements, structure of atoms, molecules; Chemical compounds. States: solid, liquid and gaseous; Changes between states.				
2.2 Mechanics				
2.2.1 Statics	1	2	1	1
Forces, moments and couples, representation as vectors; Centre of gravity; Elements of theory of stress, strain and elasticity: tension, compression, shear and torsion; Nature and properties of solid, fluid and gas; Pressure and buoyancy in liquids (barometers).				
2.2.2 Kinetics	1	2	1	1
Linear movement: uniform motion in a straight line, motion under constant acceleration (motion under gravity); Rotational movement: uniform circular motion (centrifugal/ centripetal forces); Periodic motion: pendular movement; Simple theory of vibration, harmonics and resonance; Velocity ratio, mechanical advantage and efficiency.				
2.2.3 Dynamics				
(a)	1	2	1	1
Mass Force, inertia, work, power, energy (potential, kinetic and total energy), heat, efficiency;				
(b)	1	2	2	1
Momentum, conservation of momentum; Impulse; Gyroscopic principles; Friction: nature and effects, coefficient of friction (rolling resistance).				
2.2.4 Fluid dynamics				
(a)	2	2	2	2
Specific gravity and density;				
(b)	1	2	1	1

Viscosity, fluid resistance, effects of streamlining; Effects of compressibility on fluids; Static, dynamic and total pressure: Bernoulli's Theorem, venturi.				
2.3 Thermodynamics				
(a) Temperature: thermometers and temperature scales: Celsius, Fahrenheit and Kelvin; Heat definition.	2	2	2	2
(b) Heat capacity, specific heat; Heat transfer: convection, radiation and conduction; Volumetric expansion; First and second law of thermodynamics; Gases: ideal gases laws; specific heat at constant volume and constant pressure, work done by expanding gas; Isothermal, adiabatic expansion and compression, engine cycles, constant volume and constant pressure, refrigerators and heat pumps; Latent heats of fusion and evaporation, thermal energy, heat of combustion.	-	2	2	1
2.4 Optics (Light) Nature of light; speed of light; Laws of reflection and refraction: reflection at plane surfaces, reflection by spherical mirrors, refraction, lenses; Fibre optics.	-	2	2	-
2.5 Wave Motion and Sound Wave motion: mechanical waves, sinusoidal wave motion, interference phenomena, standing waves; Sound: speed of sound, production of sound, intensity, pitch and quality, Doppler effect.	-	2	2	-

MODULE 3. ELECTRICAL FUNDAMENTALS

	LEVEL			
	A	B1	B2	B3
3.1 Electron Theory Structure and distribution of electrical charges within: atoms, molecules, ions, compounds; Molecular structure of conductors, semiconductors and insulators.	1	1	1	1
3.2 Static Electricity and Conduction	1	2	2	1

Static electricity and distribution of electrostatic charges; Electrostatic laws of attraction and repulsion; Units of charge, Coulomb's Law; Conduction of electricity in solids, liquids, gases and a vacuum.					
3.3 Electrical Terminology The following terms, their units and factors affecting them: potential difference, electromotive force, voltage, current, resistance, conductance, charge, conventional current flow, electron flow.	1	2	2	1	
3.4 Generation of Electricity Production of electricity by the following methods: light, heat, friction, pressure, chemical action, magnetism and motion.	1	1	1	1	
3.5 DC Sources of Electricity Construction and basic chemical action of: primary cells, secondary cells, lead acid cells, nickel cadmium cells, other alkaline cells; Cells connected in series and parallel; Internal resistance and its effect on a battery; Construction, materials and operation of thermocouples; Operation of photo-cells.	1	2	2	2	
3.6 DC Circuits Ohms Law, Kirchoff's Voltage and Current Laws; Calculations using the above laws to find resistance, voltage and current; Significance of the internal resistance of a supply.	-	2	2	1	
3.7 Resistance/Resistor					
(a) Resistance and affecting factors; Specific resistance; Resistor colour code, values and tolerances, preferred values, wattage ratings; Resistors in series and parallel; Calculation of total resistance using series, parallel and series parallel combinations; Operation and use of potentiometers and rheostats; Operation of Wheatstone Bridge.	-	2	2	1	
(b) Positive and negative temperature coefficient conductance; Fixed resistors, stability, tolerance and limitations, methods of construction; Variable resistors, thermistors, voltage dependent resistors; Construction of potentiometers and rheostats;	-	1	1	-	

Construction of Wheatstone Bridge;					
3.8 Power	-	2	2	1	
Power, work and energy (kinetic and potential); Dissipation of power by a resistor; Power formula; Calculations involving power, work and energy.					
3.9 Capacitance/Capacitor	-	2	2	1	
Operation and function of a capacitor; Factors affecting capacitance area of plates, distance between plates, number of plates, dielectric and dielectric; Constant, working voltage, voltage rating; Capacitor types, construction and function; Capacitor colour coding; Calculations of capacitance and voltage in series and parallel circuits; Exponential charge and discharge of a capacitor, time constants; Testing of capacitors.					
3.10 Magnetism					
(a)	-	2	2	1	
Theory of magnetism; Properties of a magnet; Action of a magnet suspended in the Earth's magnetic field; Magnetisation and demagnetisation; Magnetic shielding; Various types of magnetic material; Electromagnets construction and principles of operation; Hand clasp rules to determine: magnetic field around current carrying conductor.					
(b)	-	2	2	1	
Magnetomotive force, field strength, magnetic flux density, permeability, hysteresis loop, retentivity, coercive force reluctance, saturation point, eddy currents; Precautions for care and storage of magnets.					
3.11 Inductance/Inductor	-	2	2	1	

Faraday's Law; Action of inducing a voltage in a conductor moving in a magnetic field; Induction principles; Effects of the following on the magnitude of an induced voltage: magnetic field strength, rate of change of flux, number of conductor turns; Mutual induction; The effect the rate of change of primary current and mutual inductance has on induced voltage; Factors affecting mutual inductance: number of turns in coil, physical size of coil, permeability of coil, position of coils with respect to each other; Lenz's Law and polarity determining rules; Back emf, self induction; Saturation point; Principle uses of inductors.					
3.12 DC Motor/Generator Theory Basic motor and generator theory; Construction and purpose of components in DC generator; Operation of, and factors affecting output and direction of current flow in DC generators; Operation of, and factors affecting output power, torque, speed and direction of rotation of DC motors; Series wound, shunt wound and compound motors; Starter Generator construction.	-	2	2	1	
3.13 AC Theory Sinusoidal waveform: phase, period, frequency, cycle; Instantaneous, average, root mean square, peak, peak to peak current values and calculations of these values, in relation to voltage, current and power; Triangular/Square waves; Single/3 phase principles.	1	2	2	1	
3.14 Resistive (R), Capacitive (C) and Inductive (L) Circuits Phase relationship of voltage and current in L, C and R circuits, parallel, series and series parallel; Power dissipation in L, C and R circuits; Impedance, phase angle, power factor and current calculations; True power, apparent power and reactive power calculations.	-	2	2	1	
3.15 Transformers	-	2	2	1	

Transformer construction principles and operation; Transformer losses and methods for overcoming them; Transformer action under load and no-load conditions; Power transfer, efficiency, polarity markings; Calculation of line and phase voltages and currents; Calculation of power in a three phase system; Primary and Secondary current, voltage, turns ratio, power, efficiency; Auto transformers.				
3.16 Filters Operation, application and uses of the following filters: low pass, high pass, band pass, band stop.	-	1	1	-
3.17 AC Generators Rotation of loop in a magnetic field and waveform produced; Operation and construction of revolving armature and revolving field type AC generators; Single phase, two phase and three phase alternators; Three phase star and delta connections advantages and uses; Permanent Magnet Generators.	-	2	2	1
3.18 AC Motors Construction, principles of operation and characteristics of: AC synchronous and induction motors both single and polyphase; Methods of speed control and direction of rotation; Methods of producing a rotating field: capacitor, inductor, shaded or split pole.	-	2	2	1

MODULE 4. ELECTRONIC FUNDAMENTALS

	LEVEL			
	A	B1	B2	B3
4.1 Semiconductors 4.1.1 Diodes (a) Diode symbols; Diode characteristics and properties; Diodes in series and parallel; Main characteristics and use of silicon controlled rectifiers (thyristors), light emitting diode, photo conductive diode, varistor, rectifier diodes; Functional testing of diodes.	-	2	2	1

(b) Materials, electron configuration, electrical properties; P and N type materials: effects of impurities on conduction, majority and minority characters; PN junction in a semiconductor, development of a potential across a PN junction in unbiased, forward biased and reverse biased conditions; Diode parameters: peak inverse voltage, maximum forward current, temperature, frequency, leakage current, power dissipation; Operation and function of diodes in the following circuits: clippers, clampers, full and half wave rectifiers, bridge rectifiers, voltage doublers and triplers; Detailed operation and characteristics of the following devices: silicon controlled rectifier (thyristor), light emitting diode, Shottky diode, photo conductive diode, varactor diode, varistor, rectifier diodes, Zener diode.	-	-	2	-	
4.1.2 Transistors					
(a) Transistor symbols; Component description and orientation; Transistor characteristics and properties.	-	1	2	1	
(b) Construction and operation of PNP and NPN transistors; Base, collector and emitter configurations; Testing of transistors; Basic appreciation of other transistor types and their uses; Application of transistors: classes of amplifier (A, B, C); Simple circuits including: bias, decoupling, feedback and stabilisation; Multistage circuit principles: cascades, push-pull, oscillators, multivibrators, flip-flop circuits.	-	-	2	-	
4.1.3 Integrated Circuits					
(a) Description and operation of logic circuits and linear circuits/operational amplifiers.	-	1	-	1	
(b) Description and operation of logic circuits and linear circuits; Introduction to operation and function of an operational amplifier used as: integrator, differentiator, voltage follower, comparator; Operation and amplifier stages connecting methods: resistive capacitive, inductive (transformer), inductive resistive (IR), direct; Advantages and disadvantages of positive and negative feedback.	-	-	2	-	
4.2 Printed Circuit Boards	-	1	2	-	

Description and use of printed circuit boards.				
4.3 Servomechanisms				
(a)	-	1	-	-
Understanding of the following terms: Open and closed loop systems, feedback, follow up, analogue transducers; Principles of operation and use of the following synchro system components/features: resolvers, differential, control and torque, transformers, inductance and capacitance transmitters.				
(b)	-	-	2	-
Understanding of the following terms: Open and closed loop, follow up, servomechanism, analogue, transducer, null, damping, feedback, deadband; Construction operation and use of the following synchro system components: resolvers, differential, control and torque, E and I transformers, inductance transmitters, capacitance transmitters, synchronous transmitters; Servomechanism defects, reversal of synchro leads, hunting.				

MODULE 5. DIGITAL TECHNIQUES / ELECTRONIC INSTRUMENT SYSTEMS

	LEVEL				
	A	B1-1 B1-3	B1-2 B1-4	B2	B3
5.1 Electronic Instrument Systems	1	2	2	3	1
Typical systems arrangements and cockpit layout of electronic instrument systems					
5.2 Numbering Systems	-	1	-	2	-
Numbering systems: binary, octal and hexadecimal; Demonstration of conversions between the decimal and binary, octal and hexadecimal systems and vice versa.					
5.3 Data Conversion	-	1	-	2	-
Analogue Data, Digital Data; Operation and application of analogue to digital, and digital to analogue converters, inputs and outputs, limitations of various types.					
5.4 Data Buses	-	2	-	2	-
Operation of data buses in aircraft systems, including knowledge of ARINC and other specifications.					
5.5 Logic Circuits					
(a)	-	2	-	2	1

Identification of common logic gate symbols, tables and equivalent circuits; Applications used for aircraft systems, schematic diagrams.						
(b) Interpretation of logic diagrams.	-	-	-	2	-	
5.6 Basic Computer Structure						
(a) Computer terminology (including bit, byte, software, hardware, CPU, IC, and various memory devices such as RAM, ROM, PROM); Computer technology (as applied in aircraft systems).	1	2	-	-	-	
(b) Computer related terminology; Operation, layout and interface of the major components in a micro computer including their associated bus systems; Information contained in single and multiaddress instruction words; Memory associated terms; Operation of typical memory devices; Operation, advantages and disadvantages of the various data storage systems.	-	-	-	2	-	
5.7 Microprocessors Functions performed and overall operation of a microprocessor; Basic operation of each of the following microprocessor elements: control and processing unit, clock, register, arithmetic logic unit.	-	-	-	2	-	
5.8 Integrated Circuits Operation and use of encoders and decoders; Function of encoder types; Uses of medium, large and very large scale integration.	-	-	-	2	-	
5.9 Multiplexing Operation, application and identification in logic diagrams of multiplexers and demultiplexers.	-	-	-	2	-	
5.10 Fibre Optics Advantages and disadvantages of fibre optic data transmission over electrical wire propagation; Fibre optic data bus; Fibre optic related terms; Terminations; Couplers, control terminals, remote terminals;	-	1	1	2	-	

Application of fibre optics in aircraft systems.					
5.11 Electronic Displays Principles of operation of common types of displays used in modern aircraft, including Cathode Ray Tubes, Light Emitting Diodes and Liquid Crystal Display.	-	2	1	2	1
5.12 Electrostatic Sensitive Devices Special handling of components sensitive to electrostatic discharges; Awareness of risks and possible damage, component and personnel anti-static protection devices.	1	2	2	2	1
5.13 Software Management Control Awareness of restrictions, airworthiness requirements and possible catastrophic effects of unapproved changes to software programmes.	-	2	1	2	1
5.14 Electromagnetic Environment Influence of the following phenomena on maintenance practices for electronic system: EMC-Electromagnetic Compatibility EMI-Electromagnetic Interference HIRF-High Intensity Radiated Field Lightning/lightning protection	-	2	2	2	1
5.15 Typical Electronic/Digital Aircraft Systems General arrangement of typical electronic/digital aircraft systems and associated BITE (Built In Test Equipment) such as: *For B1 and B2 only:* (ACARS-ARINC Communication and Addressing and Reporting System EICAS-Engine Indication and Crew Alerting System FBW-Fly by Wire FMS-Flight Management System IRS-Inertial Reference System *For B1, B2 and B3:* ECAM-Electronic Centralised Aircraft Monitoring EFIS-Electronic Flight Instrument System GPS-Global Positioning System TCAS-Traffic Alert Collision Avoidance System	-	2	2	2	1

MODULE 6. MATERIALS AND HARDWARE

	LEVEL			
	A	B1	B2	B3
6.1 Aircraft Materials — Ferrous				
(a) Characteristics, properties and identification of common alloy steels used in aircraft; Heat treatment and application of alloy steels.	1	2	1	2
(b) Testing of ferrous materials for hardness, tensile strength, fatigue strength and impact resistance.	-	1	1	1
6.2 Aircraft Materials — Non-Ferrous				
(a) Characteristics, properties and identification of common non-ferrous materials used in aircraft; Heat treatment and application of non-ferrous materials;	1	2	1	2
(b) Testing of non-ferrous material for hardness, tensile strength, fatigue strength and impact resistance.	-	1	1	1
6.3 Aircraft Materials — Composite and Non-Metallic				
6.3.1 Composite and non-metallic other than wood and fabric				
(a) Characteristics, properties and identification of common composite and non-metallic materials, other than wood, used in aircraft; Sealant and bonding agents.	1	2	2	2
(b) The detection of defects/deterioration in composite and non-metallic material. Repair of composite and non-metallic material.	1	2	-	2
6.3.2 Wooden structures	1	2	-	2

Construction methods of wooden airframe structures; Characteristics, properties and types of wood and glue used in aeroplanes; Preservation and maintenance of wooden structure; Types of defects in wood material and wooden structures; The detection of defects in wooden structure; Repair of wooden structure.					
6.3.3 Fabric covering	1	2	-	2	
Characteristics, properties and types of fabrics used in aeroplanes; Inspections methods for fabric; Types of defects in fabric; Repair of fabric covering.					
6.4 Corrosion					
(a)	1	1	1	1	
Chemical fundamentals; Formation by, galvanic action process, microbiological, stress;					
(b)	2	3	2	2	
Types of corrosion and their identification; Causes of corrosion; Material types, susceptibility to corrosion.					
6.5 Fasteners					
6.5.1 Screw threads	2	2	2	2	
Screw nomenclature; Thread forms, dimensions and tolerances for standard threads used in aircraft; Measuring screw threads.					
6.5.2 Bolts, studs and screws	2	2	2	2	
Bolt types: specification, identification and marking of aircraft bolts, international standards; Nuts: self locking, anchor, standard types; Machine screws: aircraft specifications; Studs: types and uses, insertion and removal; Self tapping screws, dowels.					
6.5.3 Locking devices	2	2	2	2	
Tab and spring washers, locking plates, split pins, pal-nuts, wire locking, quick release fasteners, keys, circlips, cotter pins.					
6.5.4 Aircraft rivets	1	2	1	2	

Types of solid and blind rivets: specifications and identification, heat treatment.				
6.6 Pipes and Unions				
(a)	2	2	2	2
Identification of, and types of rigid and flexible pipes and their connectors used in aircraft;				
(b)	2	2	1	2
Standard unions for aircraft hydraulic, fuel, oil, pneumatic and air system pipes.				
6.7 Springs	-	2	1	1
Types of springs, materials, characteristics and applications.				
6.8 Bearings	1	2	2	1
Purpose of bearings, loads, material, construction;				
Types of bearings and their application.				
6.9 Transmissions	1	2	2	1
Gear types and their application;				
Gear ratios, reduction and multiplication gear systems, driven and driving gears, idler gears, mesh patterns;				
Belts and pulleys, chains and sprockets.				
6.10 Control Cables	1	2	1	2
Types of cables;				
End fittings, turnbuckles and compensation devices;				
Pulleys and cable system components;				
Bowden cables;				
Aircraft flexible control systems.				
6.11 Electrical Cables and Connectors	1	2	2	2
Cable types, construction and characteristics;				
High tension and co-axial cables;				
Crimping;				
Connector types, pins, plugs, sockets, insulators, current and voltage rating, coupling, identification codes.				

MODULE 7. MAINTENANCE PRACTICES

Note: In the case of the B3 category, the scope of this Module shall reflect the technology of aeroplanes pertinent to this category.

	LEVEL			
	A	B1	B2	B3
7.1 Safety Precautions-Aircraft and Workshop	3	3	3	3
Aspects of safe working practices including precautions to take when working with electricity, gases especially oxygen, oils and chemicals. Also, instruction in the remedial action to be taken in the event of a fire or another accident with one or more of these hazards including knowledge on extinguishing agents.				
7.2 Workshop Practices	3	3	3	3
Care of tools, control of tools, use of workshop materials; Dimensions, allowances and tolerances, standards of workmanship; Calibration of tools and equipment, calibration standards.				
7.3 Tools	3	3	3	3
Common hand tool types; Common power tool types; Operation and use of precision measuring tools; Lubrication equipment and methods. Operation, function and use of electrical general test equipment;				
7.4 Avionic General Test Equipment	-	2	3	-
Operation, function and use of avionic general test equipment.				
7.5 Engineering Drawings, Diagrams and Standards	1	2	2	2
Drawing types and diagrams, their symbols, dimensions, tolerances and projections; Identifying title block information; Microfilm, microfiche and computerised presentations; Specification 100 of the Air Transport Association (ATA) of America; Aeronautical and other applicable standards including ISO, AN, MS, NAS and MIL; Wiring diagrams and schematic diagrams.				
7.6 Fits and Clearances	1	2	1	2
Drill sizes for bolt holes, classes of fits; Common system of fits and clearances; Schedule of fits and clearances for aircraft and engines; Limits for bow, twist and wear; Standard methods for checking shafts, bearings and other parts.				
7.7 Electrical Cables and Connectors	1	2	2	2

Continuity, insulation and bonding techniques and testing; Use of crimp tools: hand and hydraulic operated; Testing of crimp joints; Connector pin removal and insertion; Co-axial cables: testing and installation precautions; Wiring protection techniques: Cable looming and loom support, cable clamps, protective sleeving techniques including heat shrink wrapping, shielding.				
7.8 Riveting Riveted joints, rivet spacing and pitch; Tools used for riveting and dimpling; Inspection of riveted joints.	1	2	-	2
7.9 Pipes and Hoses Bending and belling/flaring aircraft pipes; Inspection and testing of aircraft pipes and hoses; Installation and clamping of pipes.	1	2	-	2
7.10 Springs Inspection and testing of springs.	1	2	-	1
7.11 Bearings Testing, cleaning and inspection of bearings; Lubrication requirements of bearings; Defects in bearings and their causes.	1	2	-	2
7.12 Transmissions Inspection of gears, backlash; Inspection of belts and pulleys, chains and sprockets; Inspection of screw jacks, lever devices, push-pull rod systems.	1	2	-	2
7.13 Control Cables Swaging of end fittings; Inspection and testing of control cables; Bowden cables; aircraft flexible control systems.	1	2	-	2
7.14 Material handling				
7.14.1 Sheet Metal Marking out and calculation of bend allowance; Sheet metal working, including bending and forming; Inspection of sheet metal work.	-	2	-	2

7.14.2 Composite and non-metallic Bonding practices; Environmental conditions; Inspection methods.	-	2	-	2
7.15 Welding, Brazing, Soldering and Bonding				
(a) Soldering methods; inspection of soldered joints.	-	2	2	2
(b) Welding and brazing methods; Inspection of welded and brazed joints; Bonding methods and inspection of bonded joints.	-	2	-	2
7.16 Aircraft Weight and Balance				
(a) Centre of Gravity/Balance limits calculation: use of relevant documents;	-	2	2	2
(b) Preparation of aircraft for weighing; Aircraft weighing	-	2	-	2
7.17 Aircraft Handling and Storage Aircraft taxiing/towing and associated safety precautions; Aircraft jacking, chocking, securing and associated safety precautions; Aircraft storage methods; Refuelling/defuelling procedures; De-icing/anti-icing procedures; Electrical, hydraulic and pneumatic ground supplies. Effects of environmental conditions on aircraft handling and operation.	2	2	2	2
7.18 Disassembly, Inspection, Repair and Assembly Techniques				
(a) Types of defects and visual inspection techniques. Corrosion removal, assessment and reprotection.	2	3	2	3
(b) General repair methods, Structural Repair Manual; Ageing, fatigue and corrosion control programmes;	-	2	-	2

(c) Non destructive inspection techniques including, penetrant, radiographic, eddy current, ultrasonic and boroscope methods.	-	2	1	2
(d) Disassembly and re-assembly techniques.	2	2	2	2
(e) Trouble shooting techniques	-	2	2	2
7.19 Abnormal Events				
(a) Inspections following lightning strikes and HIRF penetration.	2	2	2	2
(b) Inspections following abnormal events such as heavy landings and flight through turbulence.	2	2	-	2
7.20 Maintenance Procedures Maintenance planning; Modification procedures; Stores procedures; Certification/release procedures; Interface with aircraft operation; Maintenance Inspection/Quality Control/Quality Assurance; Additional maintenance procedures. Control of life limited components	1	2	2	2

MODULE 8. BASIC AERODYNAMICS

	LEVEL			
	A	B1	B2	B3
8.1 Physics of the Atmosphere International Standard Atmosphere (ISA), application to aerodynamics.	1	2	2	1
8.2 Aerodynamics	1	2	2	1

Airflow around a body; Boundary layer, laminar and turbulent flow, free stream flow, relative airflow, upwash and downwash, vortices, stagnation; The terms: camber, chord, mean aerodynamic chord, profile (parasite) drag, induced drag, centre of pressure, angle of attack, wash in and wash out, fineness ratio, wing shape and aspect ratio; Thrust, Weight, Aerodynamic Resultant; Generation of Lift and Drag: Angle of Attack, Lift coefficient, Drag coefficient, polar curve, stall; Aerofoil contamination including ice, snow, frost.				
8.3 Theory of Flight Relationship between lift, weight, thrust and drag; Glide ratio; Steady state flights, performance; Theory of the turn; Influence of load factor: stall, flight envelope and structural limitations; Lift augmentation.	1	2	2	1
8.4 Flight Stability and Dynamics Longitudinal, lateral and directional stability (active and passive).	1	2	2	1

MODULE 9. HUMAN FACTORS

Note: In the case of the B3 category, the scope of this Module shall reflect the less demanding environment of maintenance where B3 license holders work.

	LEVEL			
	A	B1	B2	B3
9.1 General The need to take human factors into account; Incidents attributable to human factors/human error; 'Murphy's' law.	1	2	2	2
9.2 Human Performance and Limitations Vision; Hearing; Information processing; Attention and perception; Memory; Claustrophobia and physical access.	1	2	2	2

9.3 Social Psychology Responsibility: individual and group; Motivation and de-motivation; Peer pressure; 'Culture' issues; Team working; Management, supervision and leadership.	1	1	1	1
9.4 Factors Affecting Performance Fitness/health; Stress: domestic and work related; Time pressure and deadlines; Workload: overload and underload; Sleep and fatigue, shiftwork; Alcohol, medication, drug abuse.	2	2	2	2
9.5 Physical Environment Noise and fumes; Illumination; Climate and temperature; Motion and vibration; Working environment.	1	1	1	1
9.6 Tasks Physical work; Repetitive tasks; Visual inspection; Complex systems.	1	1	1	1
9.7 Communication Within and between teams; Work logging and recording; Keeping up to date, currency; Dissemination of information.	2	2	2	2
9.8 Human Error Error models and theories; Types of error in maintenance tasks; Implications of errors (i.e accidents); Avoiding and managing errors.	1	2	2	2

9.9 Hazards in the Workplace Recognising and avoiding hazards; Dealing with emergencies.	1	2	2	2

MODULE 10. AVIATION LEGISLATION

	LEVEL			
	A	B1	B2	B3
10.1 Regulatory Framework Role of International Civil Aviation Organisation; Role of EASA; Role of the Member States; Relationship between Part-145, Part-66, Part-147 and Part-M; Relationship with other Aviation Authorities.	1	1	1	1
10.2 Part-66 — Certifying Staff — Maintenance Detailed understanding of Part-66.	2	2	2	2
10.3 Part-145 - Part-M Subpart F — Approved Maintenance Organisations Detailed understanding of Part-145.	2	2	2	2
10.4 JAR-OPS — Commercial Air Transportation Air Operators Certificates; Operators Responsibilities; Documents to be Carried; Aircraft Placarding (Markings);	1	1	1	-
10.5 Aircraft Certification				
(a) General Certification rules: such as EACS 23/25/27/29; Type Certification; Supplemental Type Certification; Part-21 Design/Production Organisation Approvals.	-	1	1	1
(b) Documents Certificate of Airworthiness; Certificate of Registration; Noise Certificate; Weight Schedule;	-	2	2	2

Radio Station Licence and Approval.				
10.6 Part-M	2	2	2	2
Detailed understanding of Part-M.				
10.7 Applicable National and International Requirements for (if not superseded by EU requirements).				
(a)	1	2	2	2
Maintenance Programmes, Maintenance checks and inspections;				
Only for A to B2 licences:				
Master Minimum Equipment Lists, Minimum Equipment List, Dispatch Deviation Lists;				
For all licences:				
Airworthiness Directives;				
Service Bulletins, manufacturers service information;				
Modifications and repairs;				
Maintenance documentation: maintenance manuals, structural repair manual, illustrated parts catalogue, etc.;				
(b)	-	1	1	1
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. .				

MODULE 11A. TURBINE AEROPLANE AERODYNAMICS, STRUCTURES AND SYSTEMS

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MODULE 11B. PISTON AEROPLANE, AERODYNAMICS, STRUCTURES AND SYSTEMS

Note: The scope of this Module ~~should~~ shall reflect the technology of aeroplanes pertinent to the A2, ~~and~~ B1.2 and B3 category.

	LEVEL			
	A	B1	B2	B3
11.1 Theory of Flight				

11.1.1 Aeroplane Aerodynamics and Flight Controls Operation and effect of: — roll control: ailerons and spoilers; — pitch control: elevators, stabilators, variable incidence stabilisers and canards; — yaw control, rudder limiters; Control using elevons, ruddervators; High lift devices, slots, slats, flaps, flaperons; Drag inducing devices, spoilers, lift dumpers, speed brakes; Effects of wing fences, saw tooth leading edges; Boundary layer control using, vortex generators, stall wedges or leading edge devices; Operation and effect of trim tabs, balance and anti-balance (leading) tabs, servo tabs, spring tabs, mass balance, control surface bias, aerodynamic balance panels;	1	2	-	1	
11.1.2 High Speed Flight — N/A	-	-	-	-	
11.2 Airframe Structures — General Concepts					
(a) Airworthiness requirements for structural strength; Structural classification, primary, secondary and tertiary; Fail safe, safe life, damage tolerance concepts; Zonal and station identification systems; Stress, strain, bending, compression, shear, torsion, tension, hoop stress, fatigue; Drains and ventilation provisions; System installation provisions; Lightning strike protection provision; Aircraft bonding.	2	2	-	2	
(b) Construction methods of: stressed skin fuselage, formers, stringers, longerons, bulkheads, frames, doublers, struts, ties, beams, floor structures, reinforcement, methods of skinning, anti-corrosive protection, wing, empennage and engine attachments; Structure assembly techniques: riveting, bolting, bonding; Methods of surface protection, such as chromating, anodising, painting; Surface cleaning; Airframe symmetry: methods of alignment and symmetry checks.	1	2	-	2	
11.3 Airframe Structures — Aeroplanes					
11.3.1 Fuselage (ATA 52/53/56)	1	2	-	1	

Construction and pressurisation sealing; Wing, tail-plane pylon and undercarriage attachments; Seat installation; Doors and emergency exits: construction and operation; Window and windscreen attachment.					
11.3.2 Wings (ATA 57)	1	2	-	1	
Construction; Fuel storage; Landing gear, pylon, control surface and high lift/drag attachments.					
11.3.3 Stabilisers (ATA 55)	1	2	-	1	
Construction; Control surface attachment.					
11.3.4 Flight Control Surfaces (ATA 55/57)	1	2	-	1	
Construction and attachment; Balancing — mass and aerodynamic.					
11.3.5 Nacelles/Pylons (ATA 54)					
(a)	1	2	-	1	
Nacelles/Pylons: — Construction; — Firewalls; — Engine mounts.					
11.4 Air Conditioning and Cabin Pressurisation (ATA 21)	~~1~~	~~3~~	~~-~~		
(a)	1	3	-	-	
Pressurisation and air conditioning systems; Cabin pressure controllers, protection and warning devices. Heating systems					
(b)					
Heating systems	-	-	-	1	
11.5 Instruments/Avionic Systems					
11.5.1 Instrument Systems (ATA 31)	1	2	-	1	

Pitot static: altimeter, air speed indicator, vertical speed indicator; Gyroscopic: artificial horizon, attitude director, direction indicator, horizontal situation indicator, turn and slip indicator, turn coordinator; Compasses: direct reading, remote reading; Angle of attack indication, stall warning systems. Other aircraft system indication.					
11.5.2 Avionic Systems	1	1	-	1	
Fundamentals of system lay-outs and operation of: — Auto Flight (ATA 22); — Communications (ATA 23); — Navigation Systems (ATA 34).					
11.6 Electrical Power (ATA 24)	1	3	-	2	
Batteries Installation and Operation; DC power generation; Voltage regulation; Power distribution; Circuit protection; Inverters, transformers.					
11.7 Equipment and Furnishings (ATA 25)					
(a)	2	2	-	2	
Emergency equipment requirements; Seats, harnesses and belts.					
(b)	1	1	-	-	
Cabin lay-out; Equipment lay-out; Cabin Furnishing Installation (level 2); Cabin entertainment equipment; Galley installation; Cargo handling and retention equipment; Airstairs.					
11.8 Fire Protection (ATA 26)					
(a)	1	3	-	-	
Fire extinguishing systems; Fire and smoke detection and warning systems; System tests.					
(b)	1	3	-	2	

Portable fire extinguisher.					
11.9 Flight Controls (ATA 27)	1	3	-	3	
Primary controls: aileron, elevator, rudder; Trim tabs; High lift devices; System operation: manual; Gust locks; Balancing and rigging; Stall warning system.					
11.10 Fuel Systems (ATA 28)	1	3	-	2	
System lay-out; Fuel tanks; Supply systems; Cross-feed and transfer; Indications and warnings; Refuelling and defuelling.					
11.11 Hydraulic Power (ATA 29)	1	3	-	2	
System lay-out; Hydraulic fluids; Hydraulic reservoirs and accumulators; Pressure generation: electric, mechanical; Pressure Control; Power distribution; Indication and warning systems.					
11.12 Ice and Rain Protection (ATA 30)	1	3	-	1	
Ice formation, classification and detection; De-icing systems: electrical, hot air, pneumatic and chemical; Probe and drain heating; Wiper systems.					
11.13 Landing Gear (ATA 32)	2	3	-	2	
Construction, shock absorbing; Extension and retraction systems: normal and emergency; Indications and warning; Wheels, brakes, antiskid and autobraking; Tyres; Steering.					

11.14 Lights (ATA 33) External: navigation, anti collision, landing, taxiing, ice; Internal: cabin, cockpit, cargo; Emergency.	2	2	-	2
11.15 Oxygen (ATA 35) System lay-out: cockpit, cabin; Sources, storage, charging and distribution; Supply regulation; Indications and warnings;	1	3	-	2
11.16 Pneumatic/Vacuum (ATA 36) System lay-out; Sources: engine/APU, compressors, reservoirs, ground supply; Pressure and vacuum pumps Pressure control; Distribution; Indications and warnings; Interfaces with other systems.	1	3	-	2
11.17 Water/Waste (ATA 38) Water system lay-out, supply, distribution, servicing and draining; Toilet system lay-out, flushing and servicing; Corrosion aspects.	2	3	-	-

MODULE 12. HELICOPTER AERODYNAMICS, STRUCTURES AND SYSTEMS

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MODULE 13. AIRCRAFT AERODYNAMICS, STRUCTURES AND SYSTEMS

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MODULE 14. PROPULSION

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MODULE 15. GAS TURBINE ENGINE

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MODULE 16. PISTON ENGINE

	LEVEL			
	A	B1	B2	B3
16.1 Fundamentals	1	2	-	2
Mechanical, thermal and volumetric efficiencies; Operating principles — 2 stroke, 4 stroke, Otto and Diesel; Piston displacement and compression ratio; Engine configuration and firing order.				
16.2 Engine Performance	1	2	-	2
Power calculation and measurement; Factors affecting engine power; Mixtures/leaning, pre-ignition.				
16.3 Engine Construction	1	2	-	2
Crank case, crank shaft, cam shafts, sumps; Accessory gearbox; Cylinder and piston assemblies; Connecting rods, inlet and exhaust manifolds; Valve mechanisms; Propeller reduction gearboxes.				
16.4 Engine Fuel Systems				
16.4.1 Carburettors	1	2	-	2
Types, construction and principles of operation; Icing and heating.				
16.4.2 Fuel injection systems	1	2	-	2
Types, construction and principles of operation.				
16.4.3 Electronic engine control	1	2	-	2

Operation of engine control and fuel metering systems including electronic engine control (FADEC); Systems lay-out and components.					
16.5 Starting and Ignition Systems Starting systems, pre-heat systems; Magneto types, construction and principles of operation; Ignition harnesses, spark plugs; Low and high tension systems.	1	2	-	2	
16.6 Induction, Exhaust and Cooling Systems Construction and operation of: induction systems including alternate air systems; Exhaust systems, engine cooling systems — air and liquid.	1	2	-	2	
16.7 Supercharging/Turbocharging Principles and purpose of supercharging and its effects on engine parameters; Construction and operation of supercharging/turbocharging systems; System terminology; Control systems; System protection.	1	2	-	2	
16.8 Lubricants and Fuels Properties and specifications; Fuel additives; Safety precautions.	1	2	-	2	
16.9 Lubrication Systems System operation/lay-out and components.	1	2	-	2	
16.10 Engine Indication Systems Engine speed; Cylinder head temperature; Coolant temperature; Oil pressure and temperature; Exhaust Gas Temperature; Fuel pressure and flow; Manifold pressure.	1	2	-	2	
16.11 Powerplant Installation Configuration of firewalls, cowlings, acoustic panels, engine mounts, anti-vibration mounts, hoses, pipes, feeders, connectors, wiring looms, control cables and rods, lifting points and drains.	1	2	-	2	

16.12 Engine Monitoring and Ground Operation Procedures for starting and ground run-up; Interpretation of engine power output and parameters; Inspection of engine and components: criteria, tolerances, and data specified by engine manufacturer.	1	3	-	2
16.13 Engine Storage and Preservation Preservation and depreservation for the engine and accessories/systems.	-	2	-	1

MODULE 17. PROPELLER

Note: In the case of the B3 category, the scope of this Module shall reflect the propeller technology of aeroplanes pertinent to this category.

	LEVEL			
	A	B1	B2	B3
17.1 Fundamentals Blade element theory; High/low blade angle, reverse angle, angle of attack, rotational speed; Propeller slip; Aerodynamic, centrifugal, and thrust forces; Torque; Relative airflow on blade angle of attack; Vibration and resonance.	1	2	-	2
17.2 Propeller Construction Composite and metal propellers; Blade station, blade face, blade shank, blade back and hub assembly; Fixed pitch, controllable pitch, constant speeding propeller; Propeller/spinner installation.	1	2	-	2
17.3 Propeller Pitch Control Speed control and pitch change methods, mechanical and electrical/electronic; Feathering and reverse pitch; Overspeed protection.	1	2	-	2
17.4 Propeller Synchronising Synchronising and synchrophasing equipment.	-	2	-	2
17.5 Propeller Ice Protection Fluid and electrical de-icing equipment.	1	2	-	2
17.6 Propeller Maintenance	1	3	-	2

Static and dynamic balancing; Blade tracking; Assessment of blade damage, erosion, corrosion, impact damage, delamination; Propeller treatment/repair schemes; Propeller engine running.				
17.7 Propeller Storage and Preservation Propeller preservation and depreservation.	1	2	-	2

Appendix II to Part-66 is amended as follows:

Appendix II

Basic Examination Standard

1. *Standardisation Basis For Examinations*

……

2. *Question Numbers for the Part-66 Appendix I Modules*

2.1. Subject Module 1 Mathematics:
Category A-16 multi-choice and 0 essay questions. Time allowed 20 minutes.
Category B1-30 multi-choice and 0 essay questions. Time allowed 40 minutes.
Category B2-30 multi-choice and 0 essay questions. Time allowed 40 minutes.
Category B3-28 multi-choice and 0 essay questions. Time allowed 35 minutes.

2.2. Subject Module 2 Physics:
Category A-30 multi-choice and 0 essay questions. Time allowed 40 minutes.
Category B1-50 multi-choice and 0 essay questions. Time allowed 65 minutes.
Category B2-50 multi-choice and 0 essay questions. Time allowed 65 minutes.
Category B3-28 multi-choice and 0 essay questions. Time allowed 35 minutes.

2.3. Subject Module 3 Electrical Fundamentals:
Category A- 20 multi-choice and 0 essay questions. Time allowed 25 minutes.
Category B1-50 multi-choice and 0 essay questions. Time allowed 65 minutes.
Category B2-50 multi-choice and 0 essay questions. Time allowed 65 minutes.
Category B3-24 multi-choice and 0 essay questions. Time allowed 30 minutes.

2.4. Subject Module 4 Electronic Fundamentals:
Category A-None.
Category B1-20 multi-choice and 0 essay questions. Time allowed 25 minutes.
Category B2-40 multi-choice and 0 essay questions. Time allowed 50 minutes.
Category B3-8 multi-choice and 0 essay questions. Time allowed 10 minutes.

2.5. Subject Module 5 Digital Techniques/Electronic Instrument Systems:
Category A-16 multi-choice and 0 essay questions. Time allowed 20 minutes.
Category B1.1 & B1.3-40 multi-choice and 0 essay questions. Time allowed 50 minutes.
Category B1.2 & B1.4-20 multi-choice and 0 essay questions. Time allowed 25 minutes.
Category B2-70 multi-choice and 0 essay questions. Time allowed 90 minutes.
Category B3-16 multi-choice and 0 essay questions. Time allowed 20 minutes.

2.6. Subject Module 6 Materials and Hardware:
Category A-50 multi-choice and 0 essay questions. Time allowed 65 minutes.
Category B1-70 multi-choice and 0 essay questions. Time allowed 90 minutes.
Category B2-60 multi-choice and 0 essay questions. Time allowed 75 minutes.
Category B3-60 multi-choice and 0 essay questions. Time allowed 75 minutes.

2.7. Subject Module 7 Maintenance Practices:
Category A-70 multi-choice and 2 essay questions. Time allowed 90 minutes plus 40 minutes.
Category B1-80 multi-choice and 2 essay questions. Time allowed 100 minutes plus 40 minutes.
Category B2-60 multi-choice and 2 essay questions. Time allowed 75 minutes plus 40 minutes.
Category B3-60 multi-choice and 2 essay questions. Time allowed 75 minutes plus 40 minutes.

2.8. Subject Module 8 Basic Aerodynamics:
Category A-20 multi-choice and 0 essay questions. Time allowed 25 minutes.
Category B1-20 multi-choice and 0 essay questions. Time allowed 25 minutes.
Category B2-20 multi-choice and 0 essay questions. Time allowed 25 minutes.
Category B3-20 multi-choice and 0 essay questions. Time allowed 25 minutes.

2.9. Subject Module 9 Human factors:
Category A-20 multi-choice and 1 essay question. Time allowed 25 minutes plus 20 minutes.
Category B1-20 multi-choice and 1 essay question. Time allowed 25 minutes plus 20 minutes.
Category B2-20 multi-choice and 1 essay question. Time allowed 25 minutes plus 20 minutes.
Category B3-16 multi-choice and 1 essay questions. Time allowed 20 minutes plus 20 minutes.

2.10. Subject Module 10 Aviation Legislation:
Category A-30 multi-choice and 1 essay question. Time allowed 40 minutes plus 20 minutes.
Category B1-40 multi-choice and 1 essay question. Time allowed 50 minutes plus 20 minutes.
Category B2-40 multi-choice and 1 essay question. Time allowed 50 minutes plus 20 minutes.
Category B3-32 multi-choice and 1 essay questions. Time allowed 40 minutes plus 20 minutes.

2.11. Subject Module 11a Turbine Aeroplane Aerodynamics, Structures and Systems:
……

2.12. Subject Module 11b Piston Aeroplane Aerodynamics, Structures and Systems:
Category A-70 multi-choice and 0 essay questions. Time allowed 90 minutes.
Category B1-100 multi-choice and 0 essay questions. Time allowed 125 minutes.
Category B2-None.
Category B3-60 multi-choice and 0 essay questions. Time allowed 75 minutes.

2.13. Subject Module 12 Helicopter Aerodynamics, Structures and Systems:
……

2.14. Subject Module 13 Aircraft Aerodynamics, Structures and Systems:
……

2.15. Subject Module 14 Propulsion:
……

2.16. Subject Module 15 Gas Turbine Engine:
……

2.17. Subject Module 16 Piston Engine:
Category A-50 multi-choice and 0 essay questions. Time allowed 65 minutes.
Category B1-70 multi-choice and 0 essay questions. Time allowed 90 minutes.
Category B2-None.

Category B3-68 multi-choice and 0 essay questions. Time allowed 85 minutes.

2.18. Subject Module 17 Propeller:
Category A-20 multi-choice and 0 essay questions. Time allowed 25 minutes.
Category B1-30 multi-choice and 0 essay questions. Time allowed 40 minutes.
Category B2-None.
Category B3-28 multi-choice and 0 essay questions. Time allowed 35 minutes.

Appendix IV to Part-66 is amended as follows:

Appendix IV

Experience requirements for extending a Part-66 Aircraft Maintenance Licence

The table below shows the experience requirements for adding a new category or subcategory to an existing Part-66 licence.

The experience must be practical maintenance experience on operating aircraft in the subcategory relevant to the application.

The experience requirement will be reduced by 50 % if the applicant has completed an approved Part-147 course relevant to the subcategory.

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	-
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	

NOTE: If a holder of a category L licence wishes to obtain any of the categories/sub-categories listed above, the full basic knowledge and experience requirements for the corresponding category/sub-category must be met and a new licence must be obtained.

Appendix V to Part-66 is amended as follows:

Appendix V

Application Form and Example of Licence Format

This appendix contains an example of the Part-66 aircraft maintenance licence and the relevant application form for such licence.

The competent authority of the Member State may modify the EASA Form 19 to include additional information necessary to support the case where the National requirements permit or require the Part-66 aircraft maintenance licence to be used outside the Part-145 requirement for non-commercial air transport purposes.

APPLICATION FOR INITIAL / AMENDMENT / RENEWAL OF PART-66 AIRCRAFT MAINTENANCE LICENCE (AML)	EASA FORM 19

APPLICANTS DETAILS:

Name: .....
Address: .....
.....

Nationality: . . . . Date and Place of Birth:. . . . . .

Part-66 AML DETAILS (if applicable):

Licence No: . . . . . Date of Issue: . . . . . .

EMPLOYERS DETAILS:

Name: .....
Address: .....
.....
AMO Approval Reference: .....
. . . . . Fax:. . . . . .

APPLICATION FOR: (Tick (V) relevant box(es))

Initial AML Amendment of AML ☐ Renewal of AML ☐

Rating	A	B1	B2	B3	C	Limited-L	Full-L
Aeroplane Turbine	☐	☐					
Aeroplane Piston	☐	☐					
Helicopter Turbine	☐	☐					
Helicopter Piston	☐	☐					
Piston engine non-pressurised Aeroplanes of MTOM of 2T and less				☐			
Aircraft listed in 66.A.1(d)						☐	☐
Avionics			☐				
Large Aircraft					☐		
Aircraft other than large					☐		

Type endorsements / Ratings endorsements (including L ratings as per 66.A.1(d))(if applicable):

. . . . . .

. . . . . .

. . . . . .

. . . . . .

I wish to apply for initial / amendment / 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: ……

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

Experience credit due Part-147 training

Examination credit due equivalent exam certificates

Enclose relevant certificates

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 competent authority grants or endorses the Part-66 AML.

Signed: …… Name: ……

Position: …… …… Date: ……

PART-66 AIRCRAFT MAINTENANCE LICENCE

1. An example of the Part-66 aircraft maintenance licence for categories A, B1, B2, B3 and C (EASA Form 26A) and an example of the Part-66 light aircraft maintenance licence for category L (Form 26B) can be found on the following pages.

2. The document must be printed in the standardised form shown but may be reduced in size to accommodate its computer generation if desired. When the size is reduced care should be exercised to ensure sufficient space is available in those places where official seals/stamps are required. Computer generated documents need not have all the boxes incorporated when any such box remains blank so long as the document can clearly be recognised as the Part-66 aircraft maintenance licence.

3. The document may be printed in the English or the official language of the Member State concerned, except that if the official language of the Member State concerned is used, a second English copy must be attached for any licence holder

that works outside that Member State to ensure understanding for the purpose of mutual recognition.

4. Each licence holder must have a unique licence number based upon a National identifier and an alpha-numeric designator.

5. The document may have the pages in any order and need not have some or any divider lines as long as the information contained is positioned such that each page layout can clearly be identified with the format of the example Part-66 aircraft maintenance licence contained herein. The aircraft type rating page need not be issued until the first type endorsement is included.

6. The document may be prepared by the competent authority of the Member State or by any Part-145 approved maintenance organisation in accordance with a procedure approved by the Member State and contained in the Part-145 maintenance organisation exposition except that in all cases the competent authority of the Member State will issue the document.

7. The preparation of any variation to an existing Part-66 aircraft maintenance licence may be carried out by the competent authority of the Member State or by any Part-145 approved maintenance organisation in accordance with a procedure approved by the competent authority of the Member State and contained in the Part-145 maintenance organisation exposition except that in all cases the competent authority of the Member State will issue the document with the variation.

8. The Part-66 aircraft maintenance licence once issued is required to be kept by the person to whom it applies in good condition and who shall remain accountable for ensuring that no unauthorised entries are made.

9. Failure to comply with paragraph 8 may invalidate the document and could lead to the holder not being permitted to hold any Part-145 certification authorisation and may result in prosecution under National law.

10. The Part-66 aircraft maintenance licence is recognised in all Member States and it is not necessary to exchange the document when working in another Member State.

11. The annex to EASA Form 26A/B is optional and may only be used to include National Privileges not covered by Part-66, where such privileges were covered by the national regulation in force prior to the implementation of Part-66.

12. For information the actual Part-66 aircraft maintenance licence issued by the competent authority of the Member State may have the pages in a different order and may not have the divider lines.

13. For licences category A, B and C, with regard to the aircraft type rating page the competent authority of the Member State may choose not to issue this page until the first aircraft type rating needs to be endorsed and will need to issue more than one aircraft type rating page when there are a number to be listed.

14. Notwithstanding 13, each page issued will be in this format and contain the specified information for that page.

15. The limitations endorsed on the licence are tasks that are excluded from the certification privileges If there are no limitations applicable, the LIMITATIONS page will be issued stating 'No limitations'.

16. Where a pre-printed format is used, any category, subcategory or type rating box which does not contain a rating entry shall be marked to show that the rating is not held.

EUROPEAN UNION
STATE
AUTHORITY NAME & LOGO

Part-66

AIRCRAFT MAINTENANCE LICENCE

.

THIS LICENCE IS RECOGNISED BY ALL EU MEMBERS

EASA FORM 26A

Conditions:

1. This licence must be signed by the holder and be accompanied by an identity document containing a photograph of the licence holder.
2. Endorsement of any (sub)categories on the page(s) entitled Part-66 (SUB)CATEGORIES **only**, does **not** permit the holder to issue a certificate of release to service for an aircraft.
3. This licence when endorsed with an aircraft type rating meets the intent of ICAO annex 1.
4. The privileges of the holder of this licence are prescribed by Part-66 and the applicable requirements of Part-M and Part-145.
5. This licence remains valid until the date specified on the limitation page unless previously suspended or revoked.
6. 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.

1. State of issue
2. Licence number
3. Full name of holder
4.Date and place of birth
5. Address of holder
6.Nationality
7. Signature of holder
8. Signature of issuing officer & date:
9. Seal and stamp of issuing Authority

Part-66 (SUB) CATEGORIES

	A	B1	B2	B3	C
Aeroplanes Turbine			n/.a	n/.a	n/.a
Aeroplanes Piston			n/.a	n/.a	n/.a
Helicopters Turbine			n/.a	n/.a	n/.a
Helicopters Piston			n/.a	n/.a	n/.a
Avionics	n/.a	n/.a		n/.a	n/.a
Large Aircraft	n/.a	n/.a	n/.a	n/.a	
Aircraft other than large	n/.a	n/.a	n/.a	n/.a	
Non pressurised Piston Aeroplanes of 2 Tons MTOM and less	n/.a	n/.a	n/.a		n/.a

LIC NO:

Part-66 AIRCRAFT TYPE RATINGS		
A/C Type or Group	Category	Official Stamp & Date

Part-66 LIMITATIONS (exclusions)

LIC NO:

Valid until:

LIC NO:

Annex to EASA FORM 26

National privileges outside the scope of Part-66, in accordance with [National Legislation] (Valid only in [Member State]*)*

Official Stamp & Date

LIC NO:

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EUROPEAN UNION
STATE
AUTHORITY NAME & LOGO

Part-66

AIRCRAFT MAINTENANCE LICENCE - Category L

.

THIS LICENCE IS RECOGNISED BY ALL EU MEMBERS

EASA FORM 26B

Conditions:

1. This licence must be signed by the holder and be accompanied by an identity document containing a photograph of the licence holder.
2. Endorsement of any (sub)categories on the page(s) entitled Part-66 (SUB)CATEGORIES **only**, does **not** permit the holder to issue a certificate of release to service for an aircraft.
3. This licence when endorsed with an aircraft type rating meets the intent of ICAO annex 1.
4. The privileges of the holder of this licence are prescribed by Part-66 and the applicable requirements of Part-M and Part-145.
5. This licence remains valid until the date specified on the limitation page unless previously suspended or revoked.
6. 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.

1. State of issue
2. Licence number
3. Full name of holder
4.Date and place of birth
5. Address of holder
6.Nationality
7. Signature of holder
8. Signature of issuing officer & date:
9. Seal and stamp of issuing Authority

Part-66 Category L level
☐ Limited ☐ Full
LIC NO:

Part-66 RATINGS

Part-66 LIMITATIONS (exclusions)

Rating	Level	Official Stamp & Date

LIC NO:

Valid until:

LIC NO:

Annex to EASA FORM 26

National privileges outside the scope of Part-66, in accordance with [National Legislation] (Valid only in [Member State])

Official Stamp & Date

LIC NO:

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A new Appendix VI to Part-66 is added as follows:

(Reserved)

A new Appendix VII to Part-66 is added as follows:

Appendix VII

Category L training requirements

Each level of L licence may be endorsed with one or with a combination of ratings.

The ratings "Wooden aircraft", "Composite aircraft" and "Metal aircraft" for Full-L licence require training in the corresponding combination of "Airframe" and "Powerplant" courses.

The table below shows the modules of training required for each rating corresponding to the Limited-L and Full-L licences. The content of each particular module is described in the syllabus further below.

The definition of the different levels of knowledge required in this Appendix are described in Appendix I to this Part.

Licence Level	RATINGS	Modules required for each rating
Limited-L	Wooden airframe	L1, L2, L3, L4, L7
	Composite airframe	L1, L2, L3, L5, L7
	Metal airframe	L1, L2, L3, L6, L7
	Powerplant	L1, L2, L3, L8
	Hot air balloons	L1, L2, L3, L10
	Gas balloons	L1, L2, L3, L11
	Hot air airships	L1, L2, L3, L10, L12
	Gas airships	L1, L2, L3, L11, L12
Full-L	Wooden aircraft	L1. L2, L3, L4, L7, L8, L9
	Composite aircraft	L1, L2, L3, L5, L7, L8, L9
	Metal aircraft	L1, L2, L3, L6, L7, L8, L9
	Wooden sailplanes	L1, L2, L3, L4, L7, L9
	Composite sailplanes	L1, L2, L3, L5, L7, L9
	Metal sailplanes	L1, L2, L3, L6, L7, L9
	Hot air balloons	L1, L2, L3, L9, L10
	Gas balloons	L1, L2, L3, L9, L11
	Hot air airships	L1, L2, L3, L9, L10, L12
	Gas airships	L1, L2, L3, L9, L11, L12
	Radio-Comm / Transponder *	L13

* This rating can only be obtained by Full-L licence holders, and only in combination with another rating.

DURATION OF TRAINING:

Limited-L licence:

Module L1 "Basic Knowledge":	10 hours
Module L2 "Human Factors":	7 hours
Module L3 "Legislation":	14 hours
Module L4 "Airframe-Wooden / Metal tube and fabric":	20 hours
Module L5 "Airframe-Composite":	20 hours
Module L6 "Airframe-Metal":	20 hours
Module L7 "Airframe-General":	37 hours

Module L8 "Powerplant":	30 hours
Module L10 "Balloon–Hot air"	15 hours
Module L11 "Balloon-Gas (free/tethered)"	15 hours
Module L12 "Airships-Hot air/Gas (add-on to modules L10 or L11)"	15 hours

Full-L licence (additional hours to those required for the same module for Limited-L):

Module L3 "Legislation":	5 hours
Module L4 "Airframe-Wooden / Metal tube and fabric":	10 hours
Module L5 "Airframe-Composite":	10 hours
Module L6 "Airframe-Metal":	10 hours
Module L7 "Airframe-General":	17 hours
Module L8 "Powerplant-Advanced":	15 hours
Module L9 "Procedures of Physical Inspection"	10 hours
Module L10 "Balloon–Hot air"	17 hours
Module L11 "Balloon-Gas (free/tethered)"	17 hours
Module L12 "Airships-Hot air/Gas (add-on to modules L10 or L11)"	15 hours
Module L13 "Radio-Comm/Transponder (add-on to modules L7, L10 or L11)"	15 hours

RATINGS (acronyms):

L.W:	**L**imited L - **W**ooden airframe / Metal tube and fabric
F.W:	**F**ull L - **W**ooden airframe / Metal tube and fabric
L.C:	**L**imited L - **C**omposite airframe
F.C:	**F**ull L - **C**omposite airframe
L.M:	**L**imited L - **M**etal airframe
F.M:	**F**ull L - **M**etal airframe
L.P:	**L**imited L - **P**owerplant
F.P:	**F**ull L - **P**owerplant
L.BA:	**L**imited L - **B**alloons and **A**irships
F.BA:	**F**ull L - **B**alloons and **A**irships
L.BHA:	**L**imited L - **B**alloons **H**ot **A**ir
F.BHA:	**F**ull L - **B**alloons **H**ot **A**ir
L.BG:	**L**imited L - **B**alloons **G**as
F.BG:	**F**ull L - **B**alloons **G**as
L.A:	Add-on syllabus for **L**imited L - **A**irship
F.A:	Add-on syllabus for **F**ull L - **A**irship

	Levels									
	L.W	F.W	L.C	F.C	L.M	F.M	L.P	F.P	L.BA	F.BA
L1 Basic Knowledge	1	1	1	1	1	1	1	1	1	1
L1.1 Mathematics										
Arithmetic										
Algebra										
Geometry										
L1.2 Physics										
Matter										
Mechanics										
Temperature: thermometers and temperature scales										
L1.3.Electrics										
DC Circuits										
Resistance/Resistor										
L1.4 Physics of the Atmosphere										
Aerodynamics										
Theory of Flight										
Flight Stability and Dynamics										

	Levels									
	L.W	F.W	L.C	F.C	L.M	F.M	L.P	F.P	L.BA	F.BA
L2 Human Factors	1	1	1	1	1	1	1	1	1	1
L2.1 General										
L2.2.Human Performance and Limitations										
L2.3 Social Psychology										
L2.4 Factors Affecting Performance										
L2.5 Physical Environment										
L2.6 Tasks										
L2.7 Communication										
L2.8 Human Error										
L2.9 Safety in the Workplace										

	Levels									
	L.W	F.W	L.C	F.C	L.M	F.M	L.P	F.P	L.BA	F.BA
L3 Legislation										
L3.1 Part-M, Section A, Subpart B to F Part-66, Section A	2	2	2	2	2	2	2	2	2	2
L3.2 Part M, Section A, Subpart G + I (additional to 3.1)		2		2		2		2		2
L3.3 Part 21, Section A, Subparts D, E, M	2	2	2	2	2	2	2	2	2	2
L3.4 Certification Specifications and Industry Standards: Applicable topics		1		1		1		1		1
L3.5 Execution of repair measures Assessment Work organisation Execution of repairs (→ DOA, Agency → approved repairs) Checks during and after repairs	3	3	3	3	3	3	3	3	3	3
L3.6 Maintenance data Equipment specifications, airworthiness directives (AD), Instructions for Continuing Airworthiness (ACI) Other maintenance records, trade literature Aircraft inspection and repair FAA AC 43.13-1A (for reference)	3	3	3	3	3	3	3	3	3	3
L3.7 Subpart F Organisation The maintenance organisation manual Legal status and organization Scope of approval Content of responsibilities Responsibilities and tasks of technical personnel Content and nature of maintenance programs Organisation management	3	3	3	3	3	3	3	3	3	3
L3.8 Safety in the workplace General requirements Construction and equipment General information	2	2	2	2	2	2	2	2	2	2

Floors, walkways Exits Crushing hazards on windows, doors, gates Electrical installations and operating materials Hoisting and support devices Inflation of tires Structural safety of stationary and mobile docking systems Ventilation of work areas Maintenance work on non purged non ventilated tanks and containers Labeling of work areas Lighting features Safekeeping of substances hazardous to health Labeling of containers and pipe lines First-aid material Fire extinguishers Operation General information Job restrictions, user manuals, instruction Personal protective gear, work clothes; skin protection, skin care and skin cleaning agents Walkways, escape routes, emergency exits Fall protection Flammable, poisonous and health hazardous gases, vapors or suspended matter Maintenance work on tanks for flammable liquids Work involving flammable processes Hygienie measures Smoking ban Measures for the prevention of explosions and fire precautions Handling of fire extinguishers First-aid Parking picketing and chocking aircraft Oxygen system precautions										
L3.9 Environmental protection Hazardous materials and hazard designation Dangerous Materials and Substances Environmental hazards Substance-related safety information (chemical physical, toxicological and hydrological properties.	1	1	1	1	1	1	1	1	1	1

Personal protective equipment, medical first aid after accidents) Labeling and storage of hazardous materials Protective measures and precautions Correct disposal of hazardous materials										

	Levels									
	L.W	F.W	L.C	F.C	L.M	F.M	L.P	F.P	L.BA	F.BA
L4. Airframe – Wooden / Metal tube and fabric										
L4.1 Airframe - Wooden/Combination metal tube and fabric Timber, plywood, adhesives, preservation, power line, properties, machining Covering (covering materials, adhesives and finishes, natural and synthetic covering materials and adhesives) Paint assembly and repair processes Recognition of damages from overstressing of airframes in wooden construction/fuselages made of a combination metal tube and fabric Deterioration of wood components and coverings Crack test (optical procedure, e.g., magnifying glass) of metal components. Corrosion and preventive methods Health and fire safety protections	2	2								
L4.2 Material science (material capability specification sheets LN, DIN) Types of wood, stability, and machining properties Steel and light alloy fittings, fracture inspections, of welded seams Plastics (overview, understanding of the properties) Colors and paints Glues, adhesives Covering materials and technologies (natural and synthetic polymers)	2	2								
L4.3 Identifying damage Overstress of wood and of composite construction airframes Load transfers Fatigue strength and crack testing	2	3								

L4.4 Occupational safety and fire protection Handing of flammable and health hazardous materials Shop regulations Precautionary measures Handing of solvents, fuels and lubricants Face masks and respiratory protective devices, skin protection	2	2								
L4.5 Performance of practical activities Locking of pin, screws, castellated nuts, turnbuckles Thimble splice Nicopress and Talurit cable splice Canopy and transparencies repairs Repair of coverings Execution of planned inspection (maintenance inspection or 100-hour inspections) on a wood or combination metal tube and fabric Execution of skin repair; splicing of plywood/stringers	3	3								
L4.6 Performance of practical activities Repair exercises (plywood, stringer, handrails, skins) Thimble splice Clamp repairs (Nicopress, Talurit) Transparency repairs Coverings components Weight and balance Aircraft Rigging. Calculation of control surface mass balance and range of movement of the control surfaces, measurement of operating forces		3								

	Levels									
	L.W	F.W	L.C	F.C	L.M	F.M	L.P	F.P	L.BA	F.BA
L5. Airframe - Composite										
L5.1 Airframe - Fiber-reinforced plastic (FRP) Basic principles of FRP construction Resins (EP, polyester, phenolic resins, vinyl ester resins) Reinforcement materials glass, aramide and carbon			2	2						

fibers, features Fillers Supporting cores (balsa, honeycombs, foamed plastics) Constructions, load transfers (solid FRP shell, sandwiches) Identification of damage during overstressing of components Procedure for FRP projects (according to MOM) including storage conditions for material Health and fire protection										
L5.2 Material Thermosetting plastics, thermoplastic polymers, catalysts Understanding, properties, machining technologies, detaching, bonding, welding Resins for FRP: epoxy resins, polyester resins, vinyl ester resins, phenolic resins Reinforcement materials From elementary fiber to filaments (release agent, finish), , patterns of weaving Properties of individual reinforcement materials (E-glass fiber, aramide-fibre, carbon-fibre) Problem with multiple-material systems, matrix Adhesion/cohesion various behaviors of fibre materials Filling materials and pigments Technical requirements for filling materials Property change of the resin composition through the use of E-glass, micro balloon, aerosols, cotton, minerals, metal powder, organic substances Paint assembly and repair technologies Support materials Honeycombs (paper, FRP, metal), balsa wood, Divinycell (Contizell), development trends			2	2						
L5.3 Assembly of airframes in Fibre reinforced composite structure (FRP) Solid shell Sandwiches Assembly of airfoils, fuselages, control surfaces				2						
L5.4 Identifying damage Behavior of FRP components in the event of overstressing Identifying of delaminations, loose bonds			2	3						

Bending vibration frequency in airfoils Load transfer Frictional connection and positive locking Fatigue strength and corrosion of metal parts Metal bonding, surface finishing of steel and aluminum components during bonding with FRP										
L5.5 Mold making Plaster molds, mold ceramics GFK molds, Gel-coat, reinforcement materials, rigidity problems Metal molds Male and female molds				3						
L5.6 Health protection and work safety Handling of various resins/temper types Handing of solvents Utilities, auxiliary materials Face guard and respiratory protective device, skin protection			2	2						
L5.7 Performance of practical activities Safeguarding of pin, screws, castellated nuts, turnbuckles Thimble splice Nicopress and Talurit clamping joint Repair of transparency Repair of coverings Carry-out a scheduled inspection on an FRP airframe (maintenance or 100-hour inspection) Performance of a repair on a sandwich shell (minor repair ≤ 20 cm)			3	3						
L5.8 Performance of practical activities Repair of solid FRP shells Mold fabrication/moulding of a component (e.g. fuselage nose, landing gear fairing, wing tip and winglet) Repair of sandwich shell where interior and exterior layer are damaged Repair of sandwich shell by pressing with a vacuum bag Centre of gravity calculations Aircraft Rigging. Calculation of control surface mass balance and range of movement of the control surfaces, measurement of operating forces Transparency repair (PMMA) with one- and two-				3						

component adhesive Bonding of transparency with the canopy frame Tempering of transparencys and other components										

	Levels									
	L.W	F.W	L.C	F.C	L.M	F.M	L.P	F.P	L.BA	F.BA
L6. Airframe – Metal										
L6.1 Airframe – Pure Metal Metallic materials and semi-finished products, machining methods Fatigue strength and crack test Assembly of components of metal construction, riveted joints, adhesive joints Identification of damage in overstressed components, effects of corrosion Health and fire protection					2	2				
L6.2 Material science (material capability specification sheets LN, DIN) Steel and its alloys Light metals and their light alloys Rivet materials Plastics (overview) Colours and paints Metal adhesives Types of corrosion Covering materials and technologies (natural and synthetic)					2	2				
L6.3 Identifying damage Overstressed metal airframes, leveling, measurement of symmetry Load transfers Fatigue strength and crack test Identifying loose riveted joints					2	3				
L6.4 Assembly of airframes in metal and composite construction Skins Frames Stringers and longerons					2	2				

Frame construction Problems in multiple-material systems										
L6.5 Fasteners Classifications of fits and clearances Metric and imperial measuring systems Oversize bolt					2	2				
L6.6 Work safety Fuels and lubricants Handling of magnesium alloys Handling of solvents, colours and paints Handling of metal adhesives Machining tools					2	2				
L6.7 Performance of practical activities Wirelocking and split pinning of screws, castellated nuts, turnbuckles Thimble splice Nicopress and Talurit clamping joint Transparency (windows canopies) repair Repair of coverings, surface damage, stop drilling cracks Execution of a scheduled inspection (maintenance inspection or 100-hour inspection of a metal airframe) Riveting procedures (small repair according to manufacturer instructions)					3	3				
L6.8 Performance of practical activities Cutting out sheet metals (aluminums and light alloys, steel and alloys) Folding bending, edging, welding, beating, smoothening, beading Repair riveting of metal airframes according to repair instruction or drawings Evaluation of rivet errors Thimble splice Clamp repairs (Nicopress, Talurit) Transparency repairs Determining the position of the centre of gravity Aircraft Rigging. Calculation of control surface mass balance and range of movement of the control surfaces, measurement of operating forces						3				

	Levels									
	L.W	F.W	L.C	F.C	L.M	F.M	L.P	F.P	L.BA	F.BA
L7 Airframe General										
L7.1 Flight control system Inspection of control surfaces, control surface bearings, trimming, valve gear with guide bearing Inspection of control cables including guides, connections and turnbuckles	2	3	2	3	2	3				
L7.2 Airframe Characteristics of landing gears and damping systems Recognizing Overstessing Inspection of the condition of tyres Permissible maintenance measures Towing/lifting equipment Surfaces out of fabric material	2	3	2	3	2	3				
L7.3. Fasteners Reliability of pins, rivets, screws Control cables, turnbuckles Quick-release couplings (L'Hotellier, SZD - Poland)	2	3	2	3	2	3				
L7.4 Locking equipment Admissibility of locking methods, locking pins, spring steel pins, locking wire, stop nuts, paint Quick-release couplings	2	3	2	3	2	3				
L7.5 Weight and Balance	2	3	2	3	2	3				
L7.6 Rescue Systems	2	3	2	3	2	3				
L7.7 On-board modules Flight instruments: airspeed indicator, altimeter, vertical speed indicator, connection and functioning Gyroscopes, other indicating instruments; testing of function Magnetic compass: installation and compensation Sailplanes: acoustic vertical speed indicator, flight recorders, aid to anti-collision	2	3	2	3	2	3				
L7.8 On-board modules installation and connections		2		2		2				

Flight instruments, mounting requirements (emergency landing conditions as per CS 22) Electric wiring, power sources, types of storage batteries, electrical parameters, electric generator, circuit breaker, energy balance, earth / ground										
L7.9 Electrical propulsion Battery system Propulsion interface Retraction system	2	3	2	3	2	3				
L7.10 Jet propulsion Fuel system Propulsion interface Retraction system	2	3	2	3	2	3				

	Levels									
	L.W	F.W	L.C	F.C	L.M	F.M	L.P	F.P	L.BA	F.BA
L8 Powerplant										
L8.1 Noise limits Explanation of the concept of "noise level" Noise certificate Enhanced sound-proofing Possible reduction of sound emissions							1	1		
L8.2 Piston engines Design, modules, interplay of components and modules Four-stroke spark ignition engine, air-cooled, fluid cooling Two-stroke engine Rotary piston engine Efficiency and influencing factors (pressure-volume diagram, power curve) Noise control devices							2	2		
L8.3 Propeller Operation and technical details of propellers and their construction Variable pitch propellers, ground and in-flight adjustable propellers, mechanically, electrically and hydraulically							2	2		

Balancing (static, dynamic) Noise problems										
L8.4 Engine control devices Mechanical control devices Electrical control devices Tank displays Functions, characteristics, typical errors and error indications							2	2		
L8.5 Hose pipes Material and machining of fuel and oil hoses Control of life limit							2	2		
L8.6 Accessories Operation of magneto ignition Control of maintenance limits Operation of carburetors Maintenance instructions on characteristic features Electric fuel pumps Operation of propeller controls Electrically operated propeller control Hydraulically operated propeller control							2	2		
L8.7 Ignition system Constructions: coil ignition, magneto ignition, and thyristor ignition Efficiency of the ignition and pre-heat system Modules of the ignition and pre-heat system Inspection and testing of a spark plug							2	2		
L8.8 FADEC							2	2		
L8.9 Exhaust systems Operation and assembly Silencers and heater installations Inspection and test CO emission test							2	2		
L8.10 Fuels and lubricants Fuel characteristics Labeling, environmentally friendly storage Lubricating oils mineral, synthetic and their parameters: labeling and characteristics, application Environmentally friendly storage and proper disposal of used oil							2	2		

L8.11 Documentation Manufacturer documents for the engine and propeller, Instructions for continuing airworthiness Maintenance manuals TBO Airworthiness Directives, technical notes and service bulletins							2	2		
L8.12 Health protection Handling of fuels and lubricants Startup of engines, features of ignition system Handling of cleansing agents and solvents							2	2		
L8.13 Illustrative material Cylinder unit with valve Carburetor High-tension magneto Differential compression tester for cylinders Overheated/damaged pistons Spark plugs of engines that were operated differently							2	2		
L8.14 Practical experience Work safety/accident prevention (handing of fuels and lubricants, startup of engines) Rigging engine control rods and Bowden cables Setting of no-load speed Checking and setting the ignition point Operational test of magnetos Checking the ignition system Testing and cleaning of spark plugs Carry out an inspection of the engine in accordance with the manufacturer instructions. Carryout a cylinder compression test Carry out a static test and evaluation of the engine run Documentation of maintenance work including replacement of components							3	3		
Powerplant - Advanced								2		
L8.15 Gas exchange in internal-combustion engines 4-stroke reciprocating engine and control units										

Energy losses										
Ignition timing										
Direct flow behavior of control units										
Wankel engine and control units										
2-stroke engine and control units										
Scavenging										
Energy losses										
Scavenging blower										
L8.16 Ignition, combustion and carburetion										
Ignition										
Spark plug										
Ignition system										
Combustion process										
Normal combustion										
Efficiency and medium pressure										
Engine knock and octane rating										
Combustion chamber shapes										
Fuel/air mix in the carburetor										
Carburetor principle, carburetor equation										
The simple carburetor										
Problems of the simple carburetor and their solutions										
Carburetor models										
Fuel/air mix during injection										
Mechanically controlled injection										
Electronically controlled injection										
Continuous injection										
Carburettor-injection comparison										
L**8.17 Super Charging**										
Super Charging process										
Gradation of the super charging process										
Embodiments										
Increase of output through super charging										
Air application and output										
Medium pressure and cylinder reloading										
Mechanical super charging										
Actual super charge										
Operating behavior of the mechanically super charged engine										

Exhaust gas turbo charging Exhaust gas turbo charger Interplay with engine (accumulation mode) Use of exhaust gas energy Impulse charging Performance limits Charging with a dynamic pressure machine (Comprex charging)										
L8.18 Flight instruments in aircraft with injection engines Special instruments of flight instruments (injection engine) Interpretation of indications in a static test Interpretation of indications in flight on various flight levels										
L8.19 Flight instruments in aircraft with supercharged engines Special instruments of flight instruments (supercharged engine) Interpretation of indications in a static test Interpretation of indications in flight on various flight levels										
L8.20 Maintenance of aircraft engines with injection system Documentation, manufacturer's documents, etc. General maintenance instructions (hourly inspections) Functional tests Ground test run Test flight Troubleshooting in the event of faults in the injection system and their correction										
L8.21 Maintenance of aircraft engines with charger systems Documentation, manufacturer's documents, etc. General maintenance instructions (hourly inspections) Functional tests Ground test run Test flight										

Troubleshooting in the event of faults in the charger system and their correction										
L8.22 Work safety and safety provisions										
Work safety and safety provisions for work on injection systems										
Work safety and safety provisions for work on charger systems										
L8.23 Visual aids:										
Carburetor										
Components of injection system										
Components of charger system										
Airplane with injection engine										
Airplane with supercharged engine										
Tool for work on injection systems										
Tool for work on charger systems										
L8.24 FADEC										

	L.W	F.W	L.C	F.C	L.M	F.M	L.P	F.P	L.BA	F.BA
L9 Procedures of Physical Inspection		3		3		3		3		3
Measurement tools										
Measure of controls deflection										
Screw torque										
Measure and calculation of centre of gravity										
Wear of slide bearings etc.										
Procedures for testing of flight instruments										
Test flight: programme and evaluation										

	Levels					
	LBHA	F.BHA	L.BG	F.BG	LA	F.A
L10 Balloon – hot air						
L10.1 Basic principles and assembly of hot-air balloons	2	2				

Assembly and individual parts Cladding material, belts, cables Envelopes, ripping panel, valve (parachute), turning vent, scoop/skirt Burner, burner frame and burner frame stanchions Compressed-gas tanks and compressed-gas hoses Basket and alternative devices (seats) Rigging accessories Maintenance and servicing jobs Annual inspection Flight papers Flight- and Maintenance Manuals Rigging and launch preparation Launch						
L10.2 Practical training Operating controls, maintenance and servicing jobs (according to flight manual)	3	3				
L10.3 Envelope Fabrics Load tapes, rip stoppers Load cables Parachute Ripping panel Turning valve Rollers, pulleys Control and shroud lines Temperature control strip, envelope thermometer Flying wires	2	3				
L10.4 Burner and fuel system Burner coils Blast-, liquid- and pilot-valves Burners/nozzles Pilot burners/nozzles Burner frame Fuel lines/hoses Fuel cylinders or tanks and valves and fittings	2	3				
L10.5 Basket and basket suspension (incl. alternative devices) Kinds of baskets (incl. alternative devices)	2	3				

Basket cables Carabineer, shackle and pins Burner support rods Fuel cylinder straps Accessories and packing diagrams						
L10.6 Equipment Fire extinguisher, fire blanket Instruments (single or combined)	2	3				
L10.7 Minor repairs Stitching Bonding	2	3				

	Levels					
	L.BHA	F.BHA	L.BG	F.BG	LA	F.A
L11 Balloon-Gas (free/tethered)						
L11.1 Basic principles and assembly of gas balloons Assembly of individual parts Envelope and netting material Envelope, ripping panel, emergency opening, cords and belts Rigid gas valve Flexible gas valve (parachute) Netting Load ring Basket and accessories (incl. and alternative devices) Electrostatic discharge paths Mooring line and drag rope Maintenance and servicing Annual inspection Flight papers Flight- and Maintenance Manuals Rigging and launch preparation Launch			2	3		
L11.2 Practical training Operating controls, maintenance and servicing jobs (according to flight manual), safety rules when using hydrogen as lifting gas			2	3		

L11.3 Envelope Fabrics Poles and reinforcement of pole Ripping panel and cord Parachute and shroud lines Valves and cords Filler neck, Paschal-ring and cords Electrostatic discharge paths			2	3		
L11.4 Valve Springs Gaskets Screwed joints Control lines Electrostatic discharge paths			2	3		
L11.5 Netting or rigging (netless) Kinds of net and other lines Mesh sizes and angles Net ring Knotting methods Electrostatic discharge paths			2	3		
L11.6 Load ring			2	3		
L11.7 Basket (incl. alternative devices) Kinds of baskets (incl. alternative devices) Strops and toggles Ballast system (bags and supports) Electrostatic discharge paths			2	3		
L11.8 Ripping cord and valve cords			2	3		
L11.9 Mooring line and drag rope			2	3		
L11.10 Minor repairs Bonding Splicing hemp ropes			2	3		
L11.11 Equipment Instruments (single or combined)			2	3		
L11.12 Tether cable (TGB only) Kinds of cables Acceptable damage of cable			2	3		

Cable swivel Cable clamps						
L11.13 Winch (TGB only) Kinds of winches Mechanical system Electrical system Emergency system Grounding/ballasting of winch			2	3		

	Levels					
	LBHA	**F.BHA**	**LBG**	**F.BG**	**LA**	**F.A**
L12 AIRSHIPS-Hot Air/Gas (add-on to modules L10 or L11)						
L12.1 Basic principles and assembly of small airships Envelope, ballonets Valves, openings Gondola Propulsion Flight- and Maintenance Manuals Rigging and launch preparation					2	3
L12.2 Practical training Operating controls, maintenance and servicing jobs (according to flight manual)					2	3
L12.3 Envelope Fabrics Ripping panel and cords Valves Catenary system					2	3
L12.4 Gondola (incl. alternative devices) Kinds of gondolas (incl. alternative devices) Airframe according to 4.1-3., 5.1-4 or 6.1-3					2	3
L12.5 Electrical system Basics about on-board electrical circuits Electrical sources (accumulators, fixation, ventilation, corrosion) Lead-, NiCd- or other accumulators, dry batteries Generators					2	3

Wiring, electrical connections Fuses External power source Energy balance						
L12.6 Propulsion **Engine** Main principles of piston engines (two/four stroke, rotary, carburettor, injection electrical, etc.) Performance Main parts (casing, pistons, cylinders, crankshaft, gear) Other parts (lubrication, ignition, filters, exhaust, controls etc.) Troubles Demounting of parts at installed engines **Fuel and lubrication** Basics about fuel Basics about lubricants Fire extinguishing means **Propeller** Main principles of propellers Kinds of propellers (fixed/adjustable) Performance Acceptable repairs Evaluation of damages **Propulsion instruments** Basics about measuring and instruments Revolution measuring Pressure measuring Temperature measuring Available fuel/power measuring					2	3
L12.7 Equipment Fire extinguisher, fire blanket Instruments (single or combined)					2	3

	L.W	F.W	L.C	F.C	L.M	F.M	L.P	F.P	L.BA	F.BA
L13 Radio-Comm/Transponder (add-on to modules L7, L10 or L11)		3		3		3				3
L13.1 Radio/ELT Channel spacing Length of antenna required – counterweight Coax cable Radio shielding – interference with ignition system										
L13.2 Transponder **Basic operation** Typical installation Installation requirements power, inputs, antennas Explanation of Mode A, C, S. **Practical Testing** Safety precautions Self test Test equipment Use of test equipment Typical test. Typical defects.										

A new Appendix VIII to Part-66 is added as follows:

Appendix VIII

Licence Category L Examination Standard

1. *Standardisation Basis for Examinations*

1.1. All examinations must be carried out using the multi-choice question format as specified below. The incorrect alternatives must seem equally plausible to anyone ignorant of the subject. All of the alternatives should be clearly related to the question and of similar vocabulary, grammatical construction and length. In numerical questions, the incorrect answers should correspond to procedural errors such as corrections applied in the wrong sense or incorrect unit conversions: they must not be mere random numbers.

1.2. Each multi-choice question must have three alternative answers of which only one must be the correct answer and the candidate must be allowed a time per module which is based upon a nominal average of 75 seconds per question.

1.3. The pass mark for each module is 75 %.

1.4. Penalty marking (negative points for failed questions) is not to be used.

1.5 The level of knowledge required in the questions must be proportionate to the level of technology of ELA1 aircraft.

2. *Number of questions:*

Limited-L:

Module L1 "Basic Knowledge":	12 questions
Module L2 "Human Factors":	8 questions
Module L3 "Legislation":	16 questions
Module L4 "Airframe-Wooden" / Metal tube and fabric:	20 questions
Module L5 "Airframe-Composite":	20 questions
Module L6 "Airframe-Metal":	20 questions
Module L7 "Airframe-General":	40 questions
Module L8 "Powerplant":	32 questions
Module L10 "Balloon-Hot air"	16 questions
Module L11 "Balloon-Gas (free/tethered)"	16 questions
Module L12 "Airships-Hot air/Gas (add-on to modules L10 or L11)"	16 questions

Full-L (additional questions to those required for the same module for Limited-L):

Module L3 "Legislation":	8 questions
Module L4 "Airframe-Wooden":	12 questions
Module L5 "Airframe-Composite":	12 questions
Module L6 "Airframe-Metal":	12 questions
Module L7 "Airframe-General":	20 questions
Module L8 "Powerplant-Advanced":	16 questions
Module L9 "Procedures of Physical Inspection"	12 questions
Module L10 "Balloon-Hot air"	20 questions
Module L11 "Balloon-Gas (free/tethered)"	20 questions
Module L12 "Airships-Hot air/Gas (add-on to modules L10 or L11)"	16 questions
Module L13 "Radio-Comm/Transponder (add-on to modules L7, L10 or L11)"	16 questions

C) <u>Draft Opinion on PART-147</u>

Commission Regulation (EC) No 2042/2003 Annex IV (Part-147) is hereby amended as follows:

<u>Point 147.A.145(d) is amended as follows:</u>

147.A.145 Privileges of the maintenance training organisation

…

(d)

1. The maintenance training organisation may subcontract the conduct of basic theoretical training, type training and related examinations to a non maintenance training organisation only when under the control of the maintenance training organisation quality system.
2. The subcontracting of basic theoretical training and examination is limited to Part-66, Appendix I, Modules 1, 2, 3, 4, 5, 6, 8, 9 and 10 and to Part-66, Appendix VII, Modules L1, L2 and L3.
3. The subcontracting of type training and examination is limited to powerplant and avionic systems.

…

Point 147.A.200 is amended as follows:

147.A.200 The approved basic training course

…

(b) The knowledge training element shall cover the subject matter for a category or subcategory A, B1, ~~or~~ B2, B3 or L aircraft maintenance licence as specified in Part-66.

…

Appendix I to Part-147 is amended as follows:

Appendix I

Basic Training Course Duration

Minimum duration of complete basic courses

Basic Course	Duration (in hours)	Theoretical training ratio (in %)
A1	800	30 to 35
A2	650	30 to 35
A3	800	30 to 35
A4	800	30 to 35
B1.1	2400	50 to 60
B1.2	2000	50 to 60
B1.3	2400	50 to 60
B1.4	2400	50 to 60
B2	2400	50 to 60
B3	1000	50 to 60

Category L basic courses shall have the duration specified in Part-66 Appendix VII. This duration will depend on the modules taken for the envisaged ratings.

Appendix II to Part-147 is amended as follows:

Appendix II

Approval Certificate

…

TRAINING / EXAMINATION APPROVAL SCHEDULE

Organisation: ……

Approval Referente: ……..

CLASS	~~RATING~~ LICENCE CATEGORY	RATING	LIMITATIONS
BASIC	-B1	TB1.1 TB1.2 TB1.3 TB1.4	AEROPLANES TURBINE AEROPLANES PISTON HELICOPTERS TURBINE HELICOPTERS PISTON
	-B2	TB2	AVIONICS
	-B3	TB3	NON-PRESSURISED PISTON AEROPLANES of 2T MTOM AND LESS
	-A	TA.1 TA.2 TA.3 TA.4	AEROPLANES TURBINE AEROPLANES PISTON HELICOPTERS TURBINE HELICOPTERS PISTON
	-L	TL	QUOTE THE SPECIFIC AIRCRAFT CATEGORY WITHIN 66.A.1(d) AND THE LEVEL OF LICENCE
TYPE / TASKS	-B1	T1	QUOTE AIRCRAFT TYPE
	-B2	T2	QUOTE AIRCRAFT TYPE
	A	T3	QUOTE AIRCRAFT TYPE
	C	T4	QUOTE AIRCRAFT TYPE

This training / examination approval schedule is valid when working in accordance with Part-147 approved maintenance training organisation exposition: …….

Date of issue: ……

Signed: ……..

For the Member State / EASA

EASA Form 11

II. Draft Decisions 2003/19/RM

A) Draft Decision AMC to PART-145

Decision No 2003/19/RM Annex II is hereby amended as follows:

A new point AMC 145.A.30(h)2 is added as follows:

AMC 145.A.30 (h)(2) Personnel requirements

The category B1, B2, B3 and L support staff need not hold a certifying authorisation in accordance with

145.A.35 (b) but the organisation may use such appropriately authorised certifying staff to satisfy the requirement.

The titles of points AMC 145.A.35(a), (b), (d), (e) and (f) are amended as follows:

AMC 145.A.35(a) Certifying staff and category B1, ~~and~~ B2, B3 and L support staff

AMC 145.A.35(b) Certifying staff and category B1, ~~and~~ B2, B3 and L support staff

AMC 145.A.35(d) Certifying staff and category B1, ~~and~~ B2, B3 and L support staff

AMC 145.A.35(e) Certifying staff and category B1, ~~and~~ B2, B3 and L support staff

AMC 145.A.35(f) Certifying staff and category B1, ~~and~~ B2, B3 and L support staff

Point AMC 145.A.35(j) is amended as follows:

AMC 145.A.35 (j) Certifying staff and category B1, ~~and~~ B2, B3 and L support staff

1. The following minimum information as applicable should be kept on record in respect of each certifying person or category B1, ~~and~~ B2, B3 and L support person:

…

Point AMC 145.A.70(a) is amended as follows:

AMC 145.A.70(a) Maintenance organisation exposition

…

3.4 Certifying staff and category B1, ~~and~~ B2, B3 and L support staff qualification and training procedures.

3.5 Certifying staff and category B1, ~~and~~ B2, B3 and L support staff records.

…

B) Draft Decision AMC to PART-66

Decision No 2003/19/RM Annex IV is hereby amended as follows:

A new point AMC 66.1 is added as follows:

AMC 66.1

A competent authority may be a ministry, a national aviation authority, or any aviation body designated by the Member State and located within that Member State. A Member State may designate more than one competent authority to cover different areas of responsibility, as long as the designation decision contains a list of the competencies of each authority and there is only one competent authority responsible for each given area of responsibility.

A new point AMC to 66.A.1(d) is added as follows:

AMC 66.A.1(d) Scope

An L licence may be issued for one or for a combination of ratings.

For a Limited-L licence:

- The ratings "Wooden airframe", "Composite airframe" and "Metal airframe" mean to cover only the airframe of aeroplanes and sailplanes, without the powerplant.

- The rating "Powerplant" may be endorsed as a separate rating.
- The rating balloon may be endorsed with the characteristics "hot air" or "gas".

For a Full-L licence:

- The ratings "Wooden aircraft", "Composite aircraft" and "Metal aircraft" mean to cover complete aeroplanes and sailplanes including motor-powered sailplanes. They include the corresponding powerplants.
- The ratings "Wooden sailplane", "Composite sailplane" and "Metal sailplane" mean to cover complete sailplanes. They do not include motor-powered sailplanes.

The ratings "wooden airframe", "wooden aircraft" and "wooden sailplanes" also covers structures made of metal tubes and fabric.

Point AMC 66.A.20(a) is amended as follows:

AMC 66.A.20(a) Privileges

…

The term "or equivalent" found in the sentence "annual inspections or equivalent" in paragraph 66.A.20(a)5 means the deepest inspection required in the maintenance programme to be performed every year.

Point AMC 66.A.20(b)2 is amended as follows:

AMC 66.A.20(b)2 Privileges

…

For category B1, ~~and~~ B2, B3 and L, for every aircraft included in the authorization the experience should be on that particular aircraft or on a similar aircraft within the same licence category for licences B2, B3 and L, or within the same licence subcategory for licence B1. Two aircraft can be considered as similar when they have similar technology, construction and comparable systems, which means equally equipped with the following (as applicable to the licence category):

a) Propulsion systems (piston or turboprop or turbofan or turboshaft or jet-engine or push propellers); and
b) Flight control systems (only mechanical controls or hydro-mechanically powered controls or electro-mechanically powered controls); and
c) Avionic systems (analog systems or digital systems); and
d) Structure (manufactured of metal or composite or wood).

As an alternative to the above:

- In the case of B1 licence endorsed with group ratings (either manufacturer group or full group) as defined in 66.A.45(g) the holder may show experience on at least one aircraft type per group and per aircraft structure (metal, composite, wood).
- In the case of a B2 licence endorsed with group ratings (either manufacturer group or full group) as defined in 66.A.45(g) the holder may show experience on at least one aircraft type per group.
- In the case of a B3 licence endorsed with the rating "piston-engine non-pressurized aeroplanes of 2000 Kg MTOM and below" as defined in 66.A.45(i) the holder may show experience on at least one aircraft type per aircraft structure (metal, composite, wood).
- In the case of an L licence endorsed with aircraft ratings as defined in 66.A.45(j) the holder may show experience on at least one aircraft type within each rating endorsed.

…

A new point AMC 66.A.25(b) is added as follows:

AMC 66.A.25(b)

For aircraft with an airframe fabricated out of a combination of wood, metal or composite material, the corresponding combination of training should be attended. For this determination, only the material of the primary structure should be considered. For example, for an aircraft with metal fuselage and wooden wings, the corresponding training for wooden and metal material should be attended.

The module L4 "Airframe-Wooden" includes in sub-module L4.1 the syllabus of training for wooden structures but also for a combination metal tube and fabric.

A new point AMC 66.A.30(a)6 and 7 is added as follows:

AMC 66.A.30(a)6 and 7

The practical experience necessary to include a rating in a Limited-L or Full-L licence as well as to upgrade an existing Limited-L licence to Full-L licence, should cover a representative cross section of tasks including at least 50% of tasks from Appendix II to AMC relevant to the licence level (limited or full) and applicable ratings, except that for balloons and airships the experience should cover the following:

- for Limited-L licence: at least 80% of tasks from Appendix II to AMC relevant to the corresponding balloon/airship rating, and
- for Full-L licence: at least 80% of tasks from Appendix II to AMC relevant to the corresponding balloon/airship rating. This 80% should include in any case all the tasks identified with an (*) in Appendix II to AMC.

Experience can be either as professional or on a voluntary basis.

Maintenance experience should be demonstrated by submission of records or logbooks showing the Appendix II tasks performed by the applicant.

Point AMC 66.A.30(e) is amended as follows:

AMC 66.A.30(e) Experience requirements

1. For category A the additional experience of civil aircraft maintenance should be a minimum of 6 months. For category B1, ~~or~~ B2 or B3 the additional experience of civil aircraft maintenance should be a minimum of 12 months.
2. …

Point AMC 66.A.30(e) is amended as follows:

AMC 66.A.45(e) Type/task training and ratings

Category C certifying staff may not carry out the duties of category B1, ~~or~~ B2, B3 and L or equivalent within base maintenance, unless they hold the relevant B1, ~~or~~ B2, B3 and L category and have passed type training corresponding to the relevant B1 or B2 category.

Point AMC 66.A.45(g) is amended as follows:

AMC 66.A.45(g) Type/task training and ratings

1. "Aircraft types representative of a group" means that:

- for the B1 category the aircraft type should include typical systems and engines relevant to the group (e.g. retractable undercarriage, pressurisation, variable pitch propeller, etc. for the single piston engine metal subgroup) and,

- for the B2 category the aircraft type should include complex avionics systems such as radio coupled autopilot, EFIS (Electronic flight instrument system), flight guidance systems, etc .

2. A "multiple engines" group automatically includes the corresponding "single engine" group.

A new point AMC 66.A.45 (i) is added as follows:

AMC 66.A.45(i)

The practical experience necessary to include the rating "piston-engine non-pressurized aeroplanes *of 2000 Kg MTOM and below"* on a B3 aircraft maintenance licence should cover an acceptable cross section including at least 50% of the tasks from Appendix II to AMC applicable to this rating. Such practical experience should be demonstrated through records as described in 66.A.20(b)(2).

Practical experience should be carried out under the supervision of an authorised certifying staff.

The practical experience required to remove the limitations should consist of a variety of tasks applicable to the limitations under the supervision of an authorised certifying staff. This should include the tasks required by a scheduled annual inspection. Alternatively, this experience may also be gained, if agreed by the competent authority, by theoretical and practical training provided or recognised by the manufacturer.
It may be acceptable to have this experience on just one aircraft type.
The application for the limitation removal should be supported by a record of experience certified by the authorised staff above.

Appendix II to AMC to Part-66 is amended as follows:

Appendix II – Aircraft type practical experience list of tasks

…

SPECIFIC TASKS FOR SAILPLANES AND MOTOR-POWERED SAILPLANES

Weigh

Re-weighing and report,

Servicing:

Lubrication of controls when applicable

General activities:

Fabrication of a flight control cable
Placards check or replace

Flight controls - Removal re-installation rigging and balancing

Flaps (when applicable),

Airbrakes,
Elevator,
Rudder,

Flight control systems – removal reinstallation rigging:

Rudder cable
Elevator pushrod
Trim system,
Gap seals –
Safeguarding of pins, screws, castellated nuts,
Stick and pedals

Inspection

Annual inspection
Special inspection of airframe

Communication system – Transponder

Removal – installation of Transponder
Installation of antenna
Replacement of antenna cable
Removal – installation of ELT

Electrical system:

Removal – installation of electrical wires,
Removal – installation of solar panels,
Installation of electrical components
Servicing of batteries

Cabin - Equipments

Removal – installation of belts - safety harness
Removal – installation of essential elements of the cabin
Pitot / Static systems – tubes removal - installation - replacement
Pitot Static – replacement of tubes,
Pitot static- leak test
Oxygen system - removal - installation - replacement - test
Flight instruments removal - installation - replacement
Canopy replacement – repair
Canopy gas dampener
Installation of an approved system
Magnetic compass installation - compensation

Removal and re-installation of:

Elevator – stabilizer,
Rudder,
Tow release
Undercarriage,
Propeller, refer to tasks for aeroplanes for details
Power plant, refer to tasks for aeroplanes for details
Pylon gas strut,
Engine compartment doors
Detachable fairings and panels.

Water ballasts - Replacement of

Wing ballasts (when applicable)
Leak tests
Fuselage and vertical fin ballasts (when applicable)
Leak test
Valves - rigging of valves.

Fuselage:

Tow mechanism nose – fuselage: replacement
Wheel – replacement of wheel
Tyre – replacement of tyre
Brake system – replacement of components – rigging
Shock absorbers – replacement of components – adjustments
Skids replacement

Fuel – Engine – Propeller – Engine instruments systems:

Refer to all tasks in blocks for aeroplanes which are related to powerplant, systems attached to the powerplant and propeller.

Wood structure

Inspection / testing for damages,
Rib structure repair,
Plywood skin repair,
Recover or repair structure with fabric,
Protective coating and finishing,
Repair of fairings,
Install patch on fabric material
Protective coating of fabric material – surface finishing
Repair of fairings

Composite structure

Laminate repair,
Sandwich structure repair
Partial gel coat repair,

Complete gel coating,
Repair of fairings.

Metal structures

Crack tests,
Repair of covering, drilling cracks,
Riveting jobs
Bonding of structures.
Anti-corrosion treatment
Repair of fairings.

SPECIFIC TASKS FOR BALLOONS AND AIRSHIPS

Tasks	**Balloon**			**Airship**	
	Hot Air	**Gas**	**Tethered Gas**	**Hot Air**	**Gas**
General activities:					
Functionality test of aircraft (*)	●	●	●	●	●
Placards check or replace	●	●	●	●	●
Documentation Annual Inspection, Repair, AD`s, equipment (*)	●	●	●	●	●
Classification Repair (*)	●	●	●	●	●
Weighing:					
Weighing and weighing report (*)	●	●	●	●	●
Servicing:					
Lubrication of controls when applicable			●	●	●
Cleaning Envelope, Basket, Burner	●	●	●	●	●
Inspections:					
Fifteen annual inspections of different types (*)	●				
Five annual inspections of different types (*)		●			
Three annual inspections of different types (*)			●	●	
Two annual inspections (*)					●
Strength test of envelope fabric (*)	●	●	●	●	●
Flight control systems – removal, inspection, reinstallation:					
Control surface cable					●
Trim system					●
Safeguarding of pins, screws, castellated nuts (*)			●	●	●
Stick and pedals					●
Hydro/Mech. control systems			●		●

Ballonet control systems (*)			●	●	●
Electrical control systems			●		●
Valves (gas valve, turning vent, parachute or rip panel) (*)	●	●	●	●	●
Control and shroud lines and pulleys	●	●	●	●	●
Elevator – stabilizer (incl. balancing if applicable)					●
Rudder (incl. balancing if applicable)					●
Drag rope		●			
Electrical system:					
Removal – installation of electrical wires			●	●	●
Removal – installation of electrical components			●	●	●
Servicing of batteries	●	●	●	●	●
Communication system – Transponder:					
Removal – installation of COM	●	●	●	●	●
Removal – installation of NAV					●
Removal – installation of XPDR	●	●	●	●	●
Installation of antenna	●	●	●	●	●
Replacement of antenna cable	●	●	●	●	●
Cabin – Equipments:					
Pitot / static systems – tubes removal - installation - replacement					●
Flight instruments removal - installation - replacement	●	●	●	●	●
Installation of an approved system	●	●	●	●	●
Magnetic compass installation - compensation					●
Fire extinguisher	●			●	●
Ballast - Replacement of:					
Water ballast (when applicable)					●
Sand/shot ballast (when applicable)		●	●		●
Valves - inspection and rigging of valves					●
Envelope:					
Inspection and repair of envelope panels/gores/seams	●	●	●	●	●
Inspection and repair of load tapes and attachment points	●	●	●	●	●
Inspection and repair of deflation system	●	●		●	
Inspection and repair of net		●	●		
Inspection and repair of mooring system			●		
Electrostatic conductivity test (if type is approved for hydrogen) (*)		●			●
Ballonet inspection and repair			●		●
Inspection and fabrication of a suspension cable or rope	●	●	●	●	●
Inspection and fabrication of a				●	●

catena					
Load ring/frame:					
Crack detection (welded and machined parts) (*)	●	●	●	●	
Heater system:					
Removal, inspection and re-installation	●			●	
Inspection and cleaning of vaporizer and filter (*)	●			●	
Inspection and replacement of hoses (*)	●			●	
Inspection and replacement of pilot flame ignition unit (*)	●			●	
Sealing of fittings (*)	●			●	
Pressure and leak test (*)	●			●	
Disassembly an assembly of fuel cell (*)	●			●	
10-year inspection of fuel cell	●			●	
Basket/gondola:					
Removal, inspection and re-installation (as applicable)	●	●	●	●	●
Inspection and fabrication of a suspension cable or rope (*)	●	●			
Removal – installation of padding	●	●			
Removal – installation of belts - safety harness				●	●
Removal – installation of essential elements of the cabin	●	●	●	●	●
Inspection and fabrication of a basket wire	●	●	●		
Inspection of operational equipment and its fixation points	●	●	●	●	●
Crack detection and repair (welded parts and frames)	●	●	●	●	●
Landing gear:					
Removal, inspection and re-installation of wheels			●	●	●
Removal, inspection and re-installation of brakes					●
Removal, inspection and re-installation of shock absorber					●
Fuel – Engine – Propeller – Engine instruments systems:					
Refer to tasks in blocks for aeroplanes				●	●
Wood structure:					
Structure repair	●	●	●		
Protective coating					
Composite structure:					
Laminate repair			●		●
Sandwich structure repair			●		●
Metal structures:					
Crack detection (welded and machined parts)	●	●	●	●	●

Riveting jobs				•	•
Bonding of structures		•	•	•	•
Anti-corrosion treatment			•	•	•
Repair of fairings			•		•
Engine:					
Tasks for aeroplanes of comparable certification level				•	•
Exhaust system:					
Tasks for aeroplanes of comparable certification level				•	•
Propeller:					
Tasks for aeroplanes of comparable certification level				•	•
Fuel system:					
Tasks for aeroplanes of comparable certification level				•	•
Hydraulic system:					
Tasks for aeroplanes of comparable certification level				•	•
Pneumatic system:					
Tasks for aeroplanes of comparable certification level				•	•
Winch system:					
Witness winch inspection			•		

C) Draft Decision GM to PART-66

Decision No 2003/19/RM Annex V is hereby amended as follows:

The first point GM 66.A.20(a) is amended as follows:

GM 66.A.20(a) Privileges

1. The following titles shown against each category designator below are intended to provide a readily understandable indication of the job function:

   Category A: Line maintenance certifying mechanic.

   Category B1: Maintenance certifying technician - mechanical.

   Category B2: Maintenance certifying technician - avionic.

   Category B3: Light aeroplane maintenance certifying technician - mechanical

   Category C: Base maintenance certifying engineer.

   Category L: ELA1/Balloon/Airship maintenance certifying technician.

   The titles adopted by each competent authority may differ from those shown to reflect titles used in the national language for the above functions but the designators A, B1, B2, B3, L and C are required by 66.A.20.

2. Individual aircraft maintenance licence holders need not be restricted to a single category. Provided that each qualification requirement is satisfied, any combination of categories may be granted.

The second point GM 66.A.20(a) is amended as follows:

GM 66.A.20(a)Privileges

…

3. The category B1, B3 and L licences also permits the certification of work involving avionic systems, providing the serviceability of the system can be established by a simple self-test facility, other on-board test systems/equipment or by simple ramp test equipment. Defect rectification involving test equipment which requires an element of decision making in its application - other than a simple go/no-go decision - cannot be certified. The category B2 will need to be qualified as category A in order to carry out simple mechanical tasks and be able to make certifications for such work.

4. The category B3 licence does not include any A subcategory. In addition, the category B3 license does not include the category L, although this does not prevent the B3 licence holder from working on non-pressurised piston aeroplanes with MTOM of less than 1000 Kg.

4. 5. The category C certification authorisation 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 both category B1, and B2, B3 and L staff, as appropriate, have signed for the maintenance under their respective specialisation. 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, and B2, B3 and L staff, as appropriate, before issue of the certificate of release to service. Category C personnel who also hold category B1, or B2, B3 or L qualifications may perform both roles in base maintenance.

Point GM 66.A.25(a) is amended as follows:

GM 66.A.25(a) Basic knowledge requirements

The levels of knowledge are directly related to the complexity of certifications appropriate to the particular 66.A.1 category, which means that category A must demonstrate a limited but adequate level of knowledge, whereas category B1, and B2 and B3 must demonstrate a complete level of knowledge in the appropriate subject modules.

Category C certifying staff must meet the relevant level of knowledge for B1 or B2.

Point GM 66.B.200 is amended as follows:

GM 66.B.200 Examination by the competent authority

……

6. Essay question generation

(a) ……

(b) Questions should be written so as to be broad enough to be answered by candidates for all licence category or sub-categories (Cat A, B1, & B2 and B3) and comply with the following general guidelines.

……

Point GM to 147.A.145(d) is amended as follows:

GM to 147.A.145 (d) Privileges of the maintenance training organisation

…

3. The reason for allowing the subcontracting of only training modules 1 to 6 and 8 to 10 of Appendix I of Part-66 and training modules L1 to L3 of Appendix VII of Part-66 only is, that most of the related subjects can generally also be taught by training organisations not specialised in aircraft maintenance and the

practical training element as specified in 147.A.200 does not apply to them. On the contrary training modules 7 and 11 to 17 of Appendix I of Part-66 and training modules L4 to L13 of Appendix VII of Part-66 are specific to aircraft maintenance and include the practical training element as specified in 147.A.200. The intent of the "limited subcontracting" option as specified in 147.A.145 is to grant Part-147 approvals only to those organisations having themselves at least the capacity to teach on aircraft maintenance specific matters.