

STATE OF LIBYA
GOVERNMENT OF LIBYA
MINISTRY OF TRANSPORT
CIVIL AVIATION AUTHORITY



دولة ليبيا
الحكومة الليبية
وزارة المواصلات
مصلحة الطيران المدني

Civil Aviation Regulations - Continuing Airworthiness

- **PART – M - CONTINUING AIRWORTHINESS REQUIREMENTS**
- **PART – 145 - MAINTENANCE ORGANISATION APPROVALS**
- **PART – 66 - CERTIFYING STAFF**
- **PART – 147 - TRAINING ORGANISATION REQUIREMENTS**

Amendment 1 - August 2016

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Libyan Civil Aviation Regulations - Continuing Airworthiness Amendment 1

1. The regulations contained herein are adopted under the provision of Article No.(5) of Libyan Civil Aviation Law No.(6) of 2005, and issued and signed up by me, as the Director General of Civil Aviation and by virtue of powers vested from the Minister of Transport under the resolution No.(154) issued on 13/05/2015.
2. Libyan Civil Aviation Regulations – Continuing Airworthiness establishes technical requirements and administrative procedures to ensure the continuing airworthiness of aircraft and aeronautical products, parts and appliances, the approval of organisations and personnel involved in these tasks
3. The Libyan Civil Aviation Regulations – Continuing Airworthiness Amendment 1 issued on 30 August 2016.
4. All references to the parts of the Replaced Regulations (see AC-GEN-001c) shall be related to the relevant parts of the Effective Regulations.
5. The Authority has adopted associated compliance or interpretative material issued by EASA as Acceptable Means of Compliance (AMCs) and Guidance Materials (GMs) wherever possible and, unless specifically stated otherwise, clarification will be based on this material or other EASA documentation, therefore, reference to EASA in this document may still be used for clarification and guidance.
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7. copies of this publication can be obtained from the following address:

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Signed on 30 August 2016 by:



Capt. Nasereddin Shaebelain
Director General

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PART-M - CONTINUING AIRWORTHINESS REQUIREMENTS

M. 1

For the purpose of this Part, the "Authority" shall be understood as the Libyan Civil Aviation Authority (LYCAA) of Libya whose authority shall cover:

- (1) For the oversight of the continuing airworthiness of individual aircraft and the issue of airworthiness review certificates for Libyan registered aircraft.
- (2) For the oversight of a maintenance organisation as specified in M.A. Subpart F of this regulation,
- (3) For the oversight of a continuing airworthiness management organisation as specified in M.A. Subpart G of this regulation,
- (4) For the approval of maintenance programmes for Libyan registered aircraft.

SECTION A TECHNICAL REQUIREMENTS**SUBPART A - GENERAL****M.A.101 Scope**

This Section establishes the measures to be taken to ensure that airworthiness is maintained, including maintenance. It also specifies the conditions to be met by the persons or organisations involved in such continuing airworthiness management.

SUBPART B

ACCOUNTABILITY

M.A.201 Responsibilities

- (a) The owner is responsible for the continuing airworthiness of an aircraft and shall ensure that no flight takes place unless:
 - (1) The aircraft is maintained in an airworthy condition, and;
 - (2) Any operational and emergency equipment fitted is correctly installed and serviceable or clearly identified as unserviceable, and;
 - (3) The airworthiness certificate remains valid, and;
 - (4) The maintenance of the aircraft is performed in accordance with the approved maintenance programme as specified in M.A.302.
- (b) When the aircraft is leased, the responsibilities of the owner are transferred to the lessee if:
 - (1) The lessee is stipulated on the registration document, or;
 - (2) Detailed in the leasing contract.

When reference is made in this Part to the 'owner', the term owner covers the owner or the lessee, as applicable.

- (c) Any person or organisation performing maintenance shall be responsible for the tasks performed.
- (d) The pilot-in-command or, in the case of commercial air transport, the operator shall be responsible for the satisfactory accomplishment of the pre-flight inspection. This inspection must be carried out by the pilot or another qualified person but need not be carried out by an approved maintenance organisation or by LYCAR.Part-66 certifying staff.
- (e) NA
- (f) In the case of large aircraft, in order to satisfy the responsibilities of point (a) the owner of an aircraft shall ensure that the tasks associated with continuing airworthiness are performed by an approved continuing airworthiness management organisation. A written contract shall be made in accordance with Appendix I. In this case, the continuing airworthiness management organisation assumes responsibility for the proper accomplishment of these tasks.
- (g) Maintenance of large aircraft, aircraft used for commercial air transport and components thereof shall be carried out by LYCAR.Part-145 approved maintenance organisation.
- (h) In the case of commercial air transport, the operator is responsible for the continuing airworthiness of the aircraft it operates and shall:
 - (1) be approved, as part of the air operator certificate issued by the LYCAA, pursuant to LYCAR.Part-M Section Subpart G for the aircraft it operates; and
 - (2) be approved in accordance with LYCAR.Part-145 or contract in accordance with M.A.708(c) with such organisation.
 - (3) ensure that no flight takes place unless the conditions defined in point (a) are met
- (i) When an operator is requested by the LYCAA to hold a certificate for commercial operations, other than for commercial air transport, it shall:

-
- (1) be appropriately approved, pursuant to M.A. Subpart G, for the management of the continuing airworthiness of the aircraft it operates or contract such an organisation; and
 - (2) be appropriately approved in accordance with Section A, Subpart F of LYCAR.Part-M. or LYCAR.Part- 145, or contract such organisations; and
 - (3) Ensure that point (a) is satisfied.
- (j) The owner/operator is responsible for granting LYCAA authorise personal an access to the organisation/aircraft to determine continued compliance with this Part.

M.A.202 Occurrence reporting

- (a) Any person or organisation responsible in accordance with point M.A.201 shall report to the LYCAA, the organisation responsible for the type design or supplemental type design and if applicable the State of operator, any identified condition of an aircraft or component which endangers flight safety.
- (b) Reports shall be made in a manner established by the LYCAA and contain all pertinent information about the condition known to the person or organisation.
- (c) Where the person or organisation maintaining the aircraft is contracted by an owner or an operator to carry out maintenance, the person or the organisation maintaining the aircraft shall also report to the owner, the operator or the continuing airworthiness management organisation any such condition affecting the owner's or the operator's aircraft or component.
- (d) Reports shall be made as soon as practicable, but in any case within 72 hours of the person or organisation identifying the condition to which the report relates.

SUBPART C

CONTINUING AIRWORTHINESS

M.A.301 Continuing airworthiness tasks

The aircraft continuing airworthiness and the serviceability of both operational and emergency equipment shall be ensured by:

- (1) The accomplishment of pre-flight inspections;
- (2) The rectification in accordance with the data specified in point M.A.304 and/or point M.A.401, as applicable, of any defect and damage affecting safe operation, taking into account, for all large aircraft or aircraft used for commercial air transport, the minimum equipment list and configuration deviation list as applicable to the aircraft type;
- (3) The accomplishment of all maintenance, in accordance with the M.A.302 approved aircraft maintenance programme;
- (4) For all large aircraft or aircraft used for commercial air transport the analysis of the effectiveness of the M.A.302 approved maintenance programme;
- (5) The accomplishment of any applicable:
 - (i) Airworthiness directive,
 - (ii) Operational directive with a continuing airworthiness impact,
 - (iii) Continued airworthiness requirement established by the LYCAA,
 - (iv) Measures mandated by LYCAA in immediate reaction to a safety problem;
- (6) The accomplishment of modifications and repairs in accordance with M.A.304;
- (7) For non-mandatory modifications and/or inspections, for all large aircraft or aircraft used for commercial air transport the establishment of an embodiment policy;
- (8) Maintenance check flights when necessary.

M.A.302 Aircraft Maintenance Programme

- (a) Maintenance of each aircraft shall be organised in accordance with an aircraft maintenance programme.
- (b) The aircraft maintenance programme and any subsequent amendments shall be approved by the LYCAA.
- (c) NA
- (d) The aircraft maintenance programme must establish compliance with:
 - (i) instructions issued by the LYCAA;
 - (ii) instructions for continuing airworthiness:
 - issued by the holders of the type-certificate, restricted type-certificate, supplemental type-certificate, major repair design approval, TSO authorisation or any other relevant approval, issued under a State of design and
 - included in the certification specifications, if applicable;

- (iii) additional or alternative instructions proposed by the owner or the continuing airworthiness management organisation once approved in accordance with point M.A.302, except for intervals of safety related tasks referred in paragraph (e), which may be escalated, subject to sufficient reviews carried out in accordance with paragraph (g) and only when subject to direct approval in accordance with point M.A.302(b).
- (e) The aircraft maintenance programme shall contain details, including frequency, of all maintenance to be carried out, including any specific tasks linked to the type and the specificity of operations.
- (f) For large aircraft, when the maintenance programme is based on maintenance steering group logic or on condition monitoring, the aircraft maintenance programme shall include a reliability programme.
- (g) The aircraft maintenance programme shall be subject to periodic reviews and amended accordingly at least once annually. These reviews shall ensure that the programme continues to be valid in light of the operating experience and instructions from the LYCAA whilst taking into account new and/or modified maintenance instructions promulgated by the type certificate and supplementary type certificate holders and any other organisation that publishes such data in accordance with continuing airworthiness instructions of State of design.

M.A.303 Airworthiness directives

Any applicable airworthiness directive issued by the LYCAA or by the state of design must be carried out within the requirements of that airworthiness directive.

M.A.304 Data for modifications and repairs

Damage shall be assessed and modifications and repairs carried out using as appropriate:

- (a) Data approved by the LYCAA; or
- (b) Data approved by a design organisation; or
- (c) data contained in certification of specification issued by a state of design

M.A.305 Aircraft continuing airworthiness record system

- (a) At the completion of any maintenance, the certificate of release to service required by point M.A.801 or point 145.A.50 shall be entered in the aircraft continuing airworthiness records. Each entry shall be made as soon as practicable but in no case more than 30 days after the day of the maintenance action.
- (b) The aircraft continuing airworthiness records shall consist of:
 - (1) an aircraft logbook, engine logbook(s) or engine module log cards, propeller logbook(s) and log cards for any service life limited component as appropriate, and,
 - (2) when required in point M.A.306, for commercial air transport or for commercial operations other than commercial air transport the operator's technical log.
- (c) The aircraft type and registration mark, the date, together with total flight time and/or flight cycles and/or landings, as appropriate, shall be entered in the aircraft logbooks.
- (d) The aircraft continuing airworthiness records shall contain the current:
 - (1) status of airworthiness directives and measures mandated by the LYCAA or state of design in immediate reaction to a safety problem;
 - (2) status of modifications and repairs;
 - (3) status of compliance with maintenance programme;
 - (4) status of service life limited components;
 - (5) mass and balance report;
 - (6) list of deferred maintenance.

- (e) In addition to the authorised release document, LYCAA Form 1 or equivalent, the following information relevant to any component installed (engine, propeller, engine module or service life-limited component) shall be entered in the appropriate engine or propeller logbook, engine module or service life limited component log card:
1. identification of the component; and
 2. the type, serial number and registration, as appropriate, of the aircraft, engine, propeller, engine module or service life-limited component to which the particular component has been fitted, along with the reference to the installation and removal of the component; and
 3. the date together with the component's accumulated total flight time and/or flight cycles and/or landings and/or calendar time, as appropriate; and
 4. the current paragraph (d) information applicable to the component.
- (f) The person responsible for the management of continuing airworthiness tasks pursuant to M.A. Subpart B, of LYCAR.Part-M shall control the records as detailed in this paragraph and present the records to the LYCAA upon request.
- (g) All entries made in the aircraft continuing airworthiness records shall be clear and accurate. When it is necessary to correct an entry, the correction shall be made in a manner that clearly shows the original entry.
- (h) An owner or operator shall ensure that a system has been established to keep the following records for the periods specified:
- (1) all detailed maintenance records in respect of the aircraft and any service life-limited component fitted thereto, until such time as the information contained therein is superseded by new information equivalent in scope and detail but not less than 36 months after the aircraft or component has been released to service; and
 - (2) the total time in service (hours, calendar time, cycles and landings) of the aircraft and all service life-limited components, at least 12 months after the aircraft or component has been permanently withdrawn from service; and
 - (3) 3. the time in service (hours, calendar time, cycles and landings) as appropriate, since last scheduled maintenance of the component subjected to a service life limit, at least until the component scheduled maintenance has been superseded by another scheduled maintenance of equivalent work scope and detail; and
 - (4) the current status of compliance with maintenance programme such that compliance with the approved aircraft maintenance programme can be established, at least until the aircraft or component scheduled maintenance has been superseded by other scheduled maintenance of equivalent work scope and detail; and
 - (5) the current status of airworthiness directives applicable to the aircraft and components, at least 12 months after the aircraft or component has been permanently withdrawn from service; and
 - (6) details of current modifications and repairs to the aircraft, engine(s), propeller(s) and any other component vital to flight safety, at least 12 months after they have been permanently withdrawn from service.

M.A.306 Operator's technical log system

- (a) In the case of commercial air transport, in addition to the requirements of M.A.305, an operator shall use an aircraft technical log system containing the following information for each aircraft:
- (1) information about each flight, necessary to ensure continued flight safety, and;
 - (2) the current aircraft certificate of release to service, and;

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- (3) the current maintenance statement giving the aircraft maintenance status of what scheduled and out of phase maintenance is next due except that the LYCAA may agree to the maintenance statement being kept elsewhere, and;
 - (4) all outstanding deferred defects rectifications that affect the operation of the aircraft, and;
 - (5) any necessary guidance instructions on maintenance support arrangements.
- (b) The aircraft technical log system and any subsequent amendment shall be approved by the LYCAA.
 - (c) An operator shall ensure that the aircraft technical log is retained for 36 months after the date of the last entry.

M.A.307 Transfer of aircraft continuing airworthiness records

- (a) The owner or operator shall ensure when an aircraft is permanently transferred from one owner or operator to another that the M.A.305 continuing airworthiness records and, if applicable, M.A.306 operator's technical log are also transferred.
- (b) The owner shall ensure, when he contracts the continuing airworthiness management tasks to a continuing airworthiness management organisation, that the M.A.305 continuing airworthiness records are transferred to the organisation.
- (c) The time periods prescribed for the retention of records shall continue to apply to the new owner, operator, or continuing airworthiness management organisation.

SUBPART D
MAINTENANCE STANDARDS

M.A.401 Maintenance data

- (a) The person or organisation maintaining an aircraft shall have access to and use only applicable current maintenance data in the performance of maintenance including modifications and repairs.
- (b) For the purposes of this Part, applicable maintenance data is:
 - (1) any applicable requirement, procedure, standard or information issued by the LYCAA,
 - (2) any applicable airworthiness directive,
 - (3) applicable instructions for continuing airworthiness, issued by type certificate holders, supplementary type certificate.
 - (4) any applicable data issued in accordance with a paragraph 145.A.45(d).
- (c) The person or organisation maintaining an aircraft shall ensure that all applicable maintenance data is current and readily available for use when required. The person or organisation shall establish a work card or worksheet system to be used and shall either transcribe accurately the maintenance data onto such work cards or worksheets or make precise reference to the particular maintenance task or tasks contained in such maintenance data.

M.A.402 Performance of maintenance

Except for maintenance performed by a maintenance organisation approved in accordance with LYCAR.Part-145, any person or organisation performing maintenance shall:

- (a) be qualified for the tasks performed, as required by this part;
- (b) ensure that the area in which maintenance is carried out is well organized and clean in respect of dirt and contamination;
- (c) use the methods, techniques, standards and instructions specified in the M.A.401 maintenance data;
- (d) use the tools, equipment and material specified in the M.A.401 maintenance data. If necessary, tools and equipment shall be controlled and calibrated to an officially recognized standard;
- (e) ensure that maintenance is performed within any environmental limitations specified in the M.A.401 maintenance data;
- (f) ensure that proper facilities are used in case of inclement weather or lengthy maintenance;
- (g) ensure that the risk of multiple errors during maintenance and the risk of errors being repeated in identical maintenance tasks are minimized;
- (h) ensure that an error capturing method is implemented after the performance of any critical maintenance task; and
- (i) carry out a general verification after completion of maintenance to ensure the aircraft or component is clear of all tools, equipment and any extraneous parts or material, and that all access panels removed have been refitted.

M.A.403 Aircraft defects

- (a) any aircraft defect that hazards seriously the flight safety shall be rectified before further flight.

- (b) only the authorised certifying staff, according to points M.A.801(b)1, M.A.801(b)2 or LYCAR.PART-145 can decide, using M.A.401 maintenance data, whether an aircraft defect hazards seriously the flight safety and therefore decide when and which rectification action shall be taken before further flight and which defect rectification can be deferred. However, this does not apply when the MEL is used by the authorised certifying staff or by the pilot.
- (c) any aircraft defect that would not hazard seriously the flight safety shall be rectified as soon as practicable, after the date the aircraft defect was first identified and within any limits specified in the maintenance data or MEL.
- (d) any defect not rectified before flight shall be recorded in the M.A.305 aircraft maintenance record system or M.A.306 operator's technical log system as applicable.

SUBPART E COMPONENTS

M.A.501 Installation

- (a) No component may be fitted unless it is in a satisfactory condition, has been appropriately released to service on LYCAA Form 1 or equivalent, and marked in accordance with LYCAR.Part-21 Subpart Q.
- (b) Prior to installation of a component on an aircraft, the person or approved maintenance organisation shall ensure that the particular component is eligible to be fitted when different modification and/or airworthiness directive configurations may be applicable.
- (c) Standard parts shall only be fitted to an aircraft or a component when the maintenance data specifies the particular standard part. Standard parts shall only be fitted when accompanied by evidence of conformity traceable to the applicable standard.
- (d) Material being either raw material or consumable material shall only be used on an aircraft or a component when the aircraft or component manufacturer states so in relevant maintenance data or as specified in LYCAR.Part-145. Such material shall only be used when the material meets the required specification and has appropriate traceability. All material must be accompanied by documentation clearly relating to the particular material and containing conformity to specification statement plus both the manufacturing and supplier source.

M.A.502 Component maintenance

- (a) The maintenance of components shall be performed by maintenance organisations appropriately approved in accordance with Section A, Subpart F of LYCAR.Part-M or with LYCAR.Part-145.
- (b) By derogation from point (a), maintenance of a component in accordance with aircraft maintenance data or, if agreed by the LYCAA, in accordance with component maintenance data, may be performed by an A rated organisation approved in accordance with Section A, Subpart F of (LYCAR.Part- M) or with LYCAR.Part-145 as well as by M.A.801 (b) 2 certifying staff only whilst such components are fitted to the aircraft. Nevertheless, such organisation or certifying staff may temporarily remove this component for maintenance, in order to improve access to the component, except when such removal generates the need for additional maintenance not eligible for the provisions of this point. Component maintenance performed in accordance with this point is not eligible for the issuance of LYCAA Form 1 and shall be subject to the aircraft release requirements provided for in paragraph M.A.801.
- (c) By derogation from point (a), maintenance of an engine/Auxiliary Power Unit (APU) component in accordance with engine/APU maintenance data or, if agreed by the LYCAA, in accordance with component maintenance data, may be performed by a B rated organisation approved in accordance with Section A, Subpart F of (LYCAR.PART- M)or with LYCAR.PART-145 only whilst such components are fitted to the engine/APU. Nevertheless, such B rated organisation may temporarily remove this component for maintenance, in order to improve access to the component, except when such removal generates the need for additional maintenance not eligible for the provisions of this point.
- (d) Reserved.
- (e) Reserved.

M.A.503 Service life limited components

- (a) Installed service life limited components shall not exceed the approved service life limit as specified in the approved maintenance programme and airworthiness directives, except as provided for in point M.A.504(c).
- (b) The approved service life is expressed in calendar time, flight hours, landings, or cycles, as appropriate.
- (c) At the end the approved service life, the component must be removed from the aircraft for maintenance, or for disposal in the case of components with a certified life limit.

M.A.504 Control of unserviceable components

- (a) A component shall be considered unserviceable in any one of the following circumstances:
 - (1) expiry of the service life limit as defined in the maintenance program;
 - (2) non-compliance with the applicable airworthiness directives and other continued airworthiness requirement mandated by the LYCAA;
 - (3) absence of the necessary information to determine the airworthiness status or eligibility for installation;
 - (4) evidence of defects or malfunctions;
 - (5) involvement in an incident or accident likely to affect its serviceability.
- (b) Unserviceable components shall be identified and stored in a secure location under the control of an approved maintenance organisation until a decision is made on the future status of such component. Nevertheless, for aircraft not used in commercial air transport other than largeaircraft, the person or organisation that declared the component unserviceable may transfer its custody, after identifying it as unserviceable, to the aircraft owner provided that such transfer is reflected in the aircraft logbook or engine logbook or component logbook.
- (c) Components which have reached their certified life limit or contain a non-repairable defect shall be classified as unsalvageable and shall not be permitted to re-enter the component supply system, unless certified life limits have been extended or a repair solution has been approved according to M.A.304.
- (d) Any person or organisation accountable under LYCAR.Part-M shall, in the case of a point (c) unsalvageable components:
 - (1) retain such component in the paragraph (b) location, or;
 - (2) arrange for the component to be mutilated in a manner that ensures that it is beyond economic salvage or repair before relinquishing responsibility for such component.
- (e) Notwithstanding point (d) a person or organisation accountable under LYCAR.Part-M may transfer responsibility of components classified as unsalvageable to an organisation for training or research without mutilation.

SUBPART F MAINTENANCE ORGANISATION

M.A.601 Scope

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

M.A.602 Application

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

M.A.603 Extent of approval

- (a) An organisation involved in activities subject to this Subpart shall not exercise its activities unless approved by the LYCAA. Appendix V of (LYCAR.Part- M) provides the template certificate for this approval.
- (b) The maintenance organisation's manual referred to in point M.A.604 shall specify the scope of work deemed to constitute approval. Appendix IV of (LYCAR.Part- M) defines all classes and ratings possible under Subpart F of LYCAR.Part- M.
- (c) Reserved.

M.A.604 Maintenance organisation manual

- (a) The maintenance organisation shall provide a manual containing at least the following information:
 - (1) A statement signed by the accountable manager to confirm that the organisation will continuously work in accordance with (LYCAR.PART- M) and the manual at all times, and;
 - (2) The organisation's scope of work, and;
 - (3) The title(s) and name(s) of person(s) referred to in M.A.606(b), and;
 - (4) An organisation chart showing associated chains of responsibility between the person(s) referred to in M.A.606 (b), and;
 - (5) A list of certifying staff with their scope of approval, and;
 - (6) A list of locations where maintenance is carried out, together with a general descriptions of the facilities, and;
 - (7) Procedures specifying how the maintenance organisation ensures compliance with this Part, and;
 - (8) The maintenance organisation manual amendment procedure(s).
- (b) The maintenance organisation manual and its amendments shall be approved by the LYCAA.
- (c) Notwithstanding point (b), minor amendments to the manual may be approved through a procedure (hereinafter called indirect approval).

M.A.605 Facilities

The organisation shall ensure that:

- (a) Facilities are provided for all planned work, specialised workshops and bays are segregated as appropriate, to ensure protection from contamination and the environment.
- (b) Office accommodation is provided for the management of all planned work including in particular, the completion of maintenance records.

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

M.A.606 Personnel requirements

- (a) The organisation shall appoint an accountable manager, who has corporate authority for ensuring that all maintenance required by the customer can be financed and carried out to the standard required by this Part.
- (b) A person or group of persons shall be nominated with the responsibility of ensuring that the organisation is always in compliance with this Subpart. Such person(s) shall be ultimately responsible to the accountable manager.
- (c) All point (b) persons shall be able to show relevant knowledge, background, and appropriate experience related to aircraft and/or component maintenance
- (d) The organisation shall have appropriate staff for the normal expected contracted work. The use of temporarily subcontracted staff is permitted in the case of higher than normally expected contracted work and only for personnel not issuing a certificate of release to service.
- (e) The qualification of all personnel involved in maintenance shall be demonstrated and recorded.
- (f) Personnel who carry out specialised tasks such as welding, non-destructive testing/inspection other than colour contrast shall be qualified in accordance with an officially recognised standard.
- (g) The maintenance organisation shall have sufficient certifying staff to issue M.A.612 and M.A.613 certificates of release to service for aircraft and components. They shall comply with the requirements of LYCAR.Part-66.
- (h) By derogation from point (g), the organisation may use certifying staff qualified in accordance with the following provisions when providing maintenance support to operators involved in commercial operations, subject to appropriate procedures to be approved as part of the organisation's manual:
 - (1) for a repetitive pre-flight airworthiness directive which specifically states that the flight crew may carry out such airworthiness directive, the organisation may issue a limited certifying staff authorisation to the aircraft commander on the basis of the flight crew licence held, provided that the organisation ensures that sufficient practical training has been carried out to ensure that such person can accomplish the airworthiness directive to the required standard;
 - (2) in the case of aircraft operating away from a supported location the organisation may issue a limited certifying staff authorisation to the aircraft commander on the basis of the flight crew licence, provided that the organisation ensures that sufficient practical training has been carried out to ensure that such person can accomplish the task to the required standard.

M.A.607 Certifying staff

- (a) In addition to M.A.606(g), certifying staff can only exercise their privileges, if the organisation has ensured:
 - (1) That certifying staff can demonstrate that,they meet the requirements of point 66.A.20(b)of LYCAR.Part-66); and
 - (2) That certifying staff have an adequate understanding of the relevant aircraft and/or aircraft component(s) to be maintained together with the associated organisation procedures.

- (b) In the following unforeseen cases, where an aircraft is grounded at a location other than the main base where no appropriate certifying staff is available, the maintenance organisation contracted to provide maintenance support may issue a one-off certification authorisation:
- (1) to one of its employees holding type qualifications on aircraft of similar technology, construction and systems; or
 - (2) to any person with not less than three years maintenance experience and holding a valid ICAO aircraft maintenance licence rated for the aircraft type requiring certification provided there is no organisation appropriately approved under this Part at that location and the contracted organisation obtains and holds on file evidence of the experience and the licence of that person.
- All such cases must be reported to the LYCAA within seven days of the issuance of such certification authorisation. The approved maintenance organisation issuing the one-off certification authorisation shall ensure that any such maintenance that could affect flight safety is re-checked.
- (c) The approved maintenance organisation shall record all details concerning certifying staff and maintain a current list of all certifying staff together with their scope of approval as part of the organisation's manual pursuant to paragraph M.A.604 (a)5.

M.A.608 Components, equipment and tools

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

M.A.609 Maintenance data

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

M.A.610 Maintenance work orders

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

M.A.611 Maintenance standards

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

M.A.612 Aircraft certificate of release to service

At the completion of all required aircraft, maintenance in accordance with this Subpart an aircraft certificate of release to service shall be issued according to point M.A.801.

M.A.613 Component certificate of release to service

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

M.A.614 Maintenance records

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

M.A.615 Privileges of the organisation

The maintenance organisation approved in accordance with Section A, Subpart F of LYCAR.Part-M, may:

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

M.A.616 Organizational review

To ensure that the approved maintenance organisation continues to meet the requirements of this Subpart, it shall organise, on a regular basis, organisational reviews.

M.A.617 Changes to the approved maintenance organisation

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

- (1) the name of the organisation;
- (2) the location of the organisation;
- (3) additional locations of the organisation;
- (4) the accountable manager;
- (5) any of the persons specified in point M.A.606(b);
- (6) the facilities, equipment, tools, material, procedures, work scope, and certifying staff that could affect the approval.

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

M.A.618 Continued validity of approval

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

M.A.619 Findings

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

SUBPART G - CONTINUING AIRWORTHINESS MANAGEMENT ORGANISATION

M.A.701 Scope

This Subpart establishes the requirements to be met by an organisation, to qualify for the issue or continuation of an approval for the management of aircraft continuing airworthiness.

M.A.702 Application

An application for issue or change of a Continuing Airworthiness Management Organisation (CAMO) approval shall be made on a form and in a manner established by the LYCAA.

M.A.703 Extent of approval

- (a) The approval is indicated on a certificate included in Appendix VI issued by the LYCAA.
- (b) Notwithstanding point (a), for commercial air transport, the approval shall be part of the air operator certificate issued by the LYCAA, for the aircraft operated.
- (c) The scope of work deemed to constitute the approval shall be specified in the continuing airworthiness management exposition in accordance with point M.A.704.

M.A.704 Continuing airworthiness management exposition

- (a) The continuing airworthiness management organisation shall provide a continuing airworthiness management exposition containing the following information:
 - (1) a statement signed by the accountable manager to confirm that the organisation will work in accordance with this Part and the exposition at all times, and;
 - (2) the organisation's scope of work, and;
 - (3) the title(s) and name(s) of person(s) referred to in points M.A.706(a), M.A.706(c), M.A.706(d), and;
 - (4) an organisation chart showing associated chains of responsibility between all the person(s) referred to in points M.A.706(a), M.A.706(c), M.A.706(d) and M.A.706(i), and;
 - (5) a list of the airworthiness staff referred to in point M.A.707, and;
 - (6) a general description and location of the facilities, and;
 - (7) procedures specifying how the continuing airworthiness management organisation ensures compliance with this Part, and;
 - (8) the continuing airworthiness management exposition amendment procedures, and;
 - (9) the list of approved aircraft maintenance programmes, or, for aircraft not involved in commercial air transport, the list of 'generic' and 'baseline' maintenance programmes.
- (b) The continuing airworthiness management exposition and its amendments shall be approved by the LYCAA
- (c) Notwithstanding point (b), minor amendments to the exposition may be approved indirectly through an indirect approval procedure. The indirect approval procedure shall define the minor amendment eligible, be established by the continuing airworthiness management organisation (CAMO) as part of the exposition and be approved by the LYCAA responsible for that continuing airworthiness management organisation.

M.A.705 Facilities

The continuing airworthiness management organisation (CAMO) shall provide suitable office accommodation at appropriate locations for the personnel specified in point M.A.706.

M.A.706 Personnel requirements

- (a) The organisation shall appoint an accountable manager, who has corporate authority for ensuring that all continuing airworthiness management activities can be financed and carried out in accordance with this Part.
- (b) For commercial air transport, the point (a) accountable manager shall be the person who also has corporate authority for ensuring that all the operations of the operator can be financed and carried out to the standard required for the issue of an air operator's certificate.
- (c) A person or group of persons shall be nominated with the responsibility of ensuring that the organisation is always in compliance with this Subpart. Such person(s) shall be ultimately responsible to the accountable manager.
- (d) For commercial air transport, the accountable manager shall designate a nominated post holder. This person shall be responsible for the management and supervision of continuing airworthiness activities, pursuant to paragraph (c).
- (e) The nominated post holder referred to in point (d) shall not be employed by a LYCAR.Part-145 approved organisation under contract to the operator, unless specifically agreed by the LYCAA.
- (f) The organisation shall have sufficient appropriately qualified staff for the expected work.
- (g) All point (c) and (d) persons shall be able to show relevant knowledge, background, and appropriate experience related to aircraft continuing airworthiness.
- (h) The qualification of all personnel involved in continuing airworthiness management shall be recorded. (i) Reserved
- (i) The organisation shall define and keep updated in the continuing airworthiness management exposition the title(s) and name(s) of person(s) referred to in points M.A.706 (a), M.A.706(c) and M.A.706(d) .
- (j) For large aircraft and for aircraft used by commercial air transport, the organisation shall establish and control the competence of personnel involved in the continuing airworthiness management, airworthiness review and/or quality audits in accordance with a procedure and to a standard agreed by the LYCAA.

M.A.707 Airworthiness review staff

- (a) To be approved to carry out airworthiness reviews, an approved continuing airworthiness management organisation shall have appropriate airworthiness review staff to issue airworthiness review certificates or recommendations referred to in Section A of Subpart I:
 - (1) For all aircraft used in commercial air transport, and aircraft above 2730 kg MTOM, these staff shall have acquired:
 - (i) at least five years' experience in continuing airworthiness; and
 - (ii) an appropriate license in compliance with LYCAR.Part-66 with appropriate type rating or an aeronautical degree/high national diploma relevant to aviation maintenance; and
 - (iii) formal aeronautical maintenance training; and
 - (iv) a position within the approved organisation.
 - (2) For aircraft not used in commercial air transport of 2 730 kg MTOM and below, and balloons, these staff shall have acquired:

- (i) at least three years' experience in continuing airworthiness, and
 - (ii) an appropriate license in compliance with LYCAR.PART-66 or an aeronautical degree or/high national diploma relevant to aviation maintenance; and
 - (iii) appropriate aeronautical maintenance training; and
 - (iv) a position within the approved organisation;
- (b) Airworthiness review staff nominated by the approved continuing airworthiness organisation can only be issued an authorisation by the approved continuing airworthiness organisation when formally accepted by the LYCAA after satisfactory completion of specific intensive training. .
- (c) The organisation shall ensure that aircraft airworthiness review staff can demonstrate appropriate recent continuing airworthiness management experience.
- (d) Airworthiness review staff shall be identified by listing each person in the continuing airworthiness management exposition together with their airworthiness review authorisation reference.
- (e) The organisation shall maintain a record of all airworthiness review staff, which shall include details of any appropriate qualification held together with a summary of relevant continuing airworthiness management experience and training and a copy of the authorisation. This record shall be retained until two years after the airworthiness review staff have left the organisation.

M.A.708 Continuing airworthiness management

- (a) All continuing airworthiness management shall be carried out according to the prescriptions of LYCAR.Part-M Subpart C.
- (b) For every aircraft managed, the approved continuing airworthiness management organisation shall:
- (1) develop and control a maintenance programme for the aircraft managed including any applicable reliability programme,
 - (2) present the aircraft maintenance programme and its amendments to the LYCAA for approval, and provide a copy of the programme to the owner of aircraft not involved in commercial air transport,
 - (3) manage the approval of modification and repairs,
 - (4) ensure that all maintenance is carried out in accordance with the approved maintenance programme and released in accordance with Section A, Subpart H of LYCAR.Part-M ,
 - (5) ensure that all applicable airworthiness directives and operational directives with a continuing airworthiness impact, are applied,
 - (6) ensure that all defects discovered during scheduled maintenance or reported are corrected by an appropriately approved maintenance organisation,
 - (7) ensure that the aircraft is taken to an appropriately approved maintenance organisation whenever necessary,
 - (8) coordinate scheduled maintenance, the application of airworthiness directives, the replacement of service life limited parts, and component inspection to ensure the work is carried out properly,
 - (9) manage and archive all continuing airworthiness records and/or operator's technical log.
 - (10) ensure that the mass and balance statement reflects the current status of the aircraft.

- (c) In the case of large aircraft or aircraft used for commercial air transport, when the operator is not appropriately approved to LYCAR.Part-145, the operator shall establish a written maintenance contract between the operator and a LYCAR.Part-145 approved organisation or another operator, detailing the functions specified under points M.A.301-2, M.A.301-3, M.A.301-5 and M.A.301-6, ensuring that all maintenance is ultimately carried out by a LYCAR.PART-145 approved maintenance organisation and defining the support of the quality functions of M.A.712(b).
- (d) Notwithstanding point (c), the contract may be in the form of individual work orders addressed to the LYCAR.Part-145 or LYCAR.Part-M Subpart-F maintenance organisation in the case of:
 - (1) an aircraft requiring unscheduled line maintenance,
 - (2) component maintenance, including engine maintenance;

M.A.709 Documentation

- (a) The approved continuing airworthiness management organisation shall hold and use applicable current maintenance data in accordance with paragraph M.A.401 for the performance of continuing airworthiness tasks referred to in paragraph M.A.708. This data may be provided by the owner or the operator, subject to an appropriate contract being established with such an owner or operator. In such case, the continuing airworthiness management organisation only needs to keep such data for the duration of the contract, except when required by paragraph M.A.714.
- (b) For aircraft not used in commercial air transport, the approved continuing airworthiness management organisation may develop 'baseline' and/or 'generic' maintenance programmes in order to allow for the initial approval and/or the extension of the scope of an approval without having the contracts referred to in Appendix I to this regulation LYCAR.Part- M. These 'baseline' and/or 'generic' maintenance programmes however do not preclude the need to establish an adequate Aircraft Maintenance Programme in compliance with paragraph M.A.302 in due time before exercising the privileges referred to in paragraph M.A.711.

M.A.710 Airworthiness review

- (a) a) To satisfy the requirement for the airworthiness review of an aircraft referred to in paragraph M.A.901, a full documented review of the aircraft records shall be carried out by the approved continuing airworthiness management organisation (CAMO) in order to be satisfied that:
 - (1) air frame, engine and propeller flying hours and associated flight cycles have been properly recorded; and
 - (2) the flight manual is applicable to the aircraft configuration and reflects the latest revision status; and
 - (3) all the maintenance due on the aircraft according to the approved maintenance programme has been carried out; and
 - (4) all known defects have been corrected or, when applicable, carried forward in a controlled manner; and
 - (5) all applicable airworthiness directives issued by the state of design or by the LYCAA have been applied and properly registered; and
 - (6) all modifications and repairs applied to the aircraft have been registered and done in compliance with the data approved by the state responsible for the type design.
 - (7) all service life limited components installed on the aircraft are properly identified, registered and have not exceeded their approved service life limit; and
 - (8) all maintenance has been released in accordance with (LYCAR.Part-M); and

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- (9) the current mass and balance statement reflects the configuration of the aircraft and is valid; and
 - (10) the aircraft complies with the latest revision of its type design.; and
 - (11) if required, the aircraft holds a noise certificate corresponding to the current configuration of the aircraft in compliance with the data approved by the state responsible for the type design.
- (b) The airworthiness review staff of the approved continuing airworthiness management organisation shall carry out a physical survey of the aircraft. For this survey, airworthiness review staff not appropriately qualified to LYCAR.Part-66 shall be assisted by such qualified personnel.
 - (c) Through the physical survey of the aircraft, the airworthiness review staff shall ensure that:
 - (1) all required markings and placards are properly installed; and
 - (2) the aircraft complies with its approved flight manual; and
 - (3) the aircraft configuration complies with the approved documentation; and
 - (4) no evident defect can be found that has not been addressed according to point M.A.403; and
 - (5) no inconsistencies can be found between the aircraft and the point (a) documented review of records.
 - (d) By derogation to paragraph M.A.901(a), the airworthiness review can be anticipated by a maximum period of 90 days without loss of continuity of the airworthiness review pattern, to allow the physical review to take place during a maintenance check.
 - (e) The airworthiness review recommendation for the issue of the airworthiness review certificate (LYCAA Form 15a) referred to in Appendix III of LYCAR.PART-M can only be issued:
 - (1) by airworthiness review staff appropriately authorised in accordance with point M.A.707 on behalf of the approved continuing airworthiness management; and
 - (2) when satisfied that the airworthiness review has been completely carried out and that there is no non-compliance which is known to endanger flight safety.
 - (f) A copy of any airworthiness review recommendation issued for an aircraft shall be sent to the LYCAA of that aircraft within 10 days.
 - (g) Airworthiness review tasks shall not be sub-contracted.
 - (h) Should the outcome of the airworthiness review be inconclusive, the LYCAA shall be informed as soon as practicable but in any case within 72 hours of the organisation identifying the condition to which the review relates.

M.A.711 Privileges of the organisation

- (a) (a) A continuing airworthiness management organisation approved in accordance with Section A, Subpart G of this regulation may:
 - (1) manage the continuing airworthiness of aircraft, except those involved in commercial air transport, as listed on the approval certificate;
 - (2) manage the continuing airworthiness of commercial air transport aircraft when listed both on its approval certificate and on its Air Operator Certificate (AOC);
 - (3) arrange to carry out limited continuing airworthiness tasks with any contracted organisation, working under its quality system, as listed on the approval certificate;
 - (4) reserved.
- (b) An approved continuing airworthiness management organisation may, additionally, be approved to make recommendation for the airworthiness review to the LYCAA.
- (c) Reserved.

M.A.712 Quality system

- (a) To ensure that the approved continuing airworthiness management organisation continues to meet the requirements of this Subpart, it shall establish a quality system and designate a quality manager to monitor compliance with, and the adequacy of, procedures required to ensure airworthy aircraft. Compliance monitoring shall include a feedback system to the accountable manager to ensure corrective action as necessary.
- (b) The quality system shall monitor activities carried out under Section A, Subpart G of LYCAR.Part-M. It shall at least include the following functions:
 - (1) monitoring that all activities carried out under Action A, of LYCAR.Part-M. Subpart G are being performed in accordance with the approved procedures, and;
 - (2) monitoring that all contracted maintenance is carried out in accordance with the contract, and;
 - (3) monitoring the continued compliance with the requirements of this Part.
- (c) The records of these activities shall be stored for at least two years.
- (d) Where the approved continuing airworthiness management organisation is approved in accordance with another Part, the quality system may be combined with that required by the other Part.
- (e) For commercial air transport in accordance with the LYCAR.Part-M Subpart G quality system shall be an integrated part of the operator's quality system.
- (f) Reserved.

M.A.713 Changes to the approved continuing airworthiness organisation

In order to enable the LYCAA to determine continued compliance with this Part, the approved continuing airworthiness management organisation shall notify it of any proposal to carry out any of the following changes, before such changes take place:

- (1) the name of the organisation.
- (2) the location of the organisation.
- (3) additional locations of the organisation.
- (4) the accountable manager.
- (5) any of the persons specified in M.A.706(c).
- (6) the facilities, procedures, work scope and staff that could affect the approval.

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

M.A.714 Record-keeping

- (a) The continuing airworthiness management organisation shall record all details of work carried out. The records required by M.A.305 and if applicable M.A.306 shall be retained.
- (b) If the continuing airworthiness management organisation has the privilege referred to in point M.A.711 (b), it shall retain a copy of each airworthiness review recommendation issued together with all supporting documents.
- (c) Reserved.
- (d) The continuing airworthiness management organisation shall retain a copy of all records referred to in points (b) until two years after the aircraft has been permanently withdrawn from service.

- (e) The records shall be stored in a manner that ensures protection from damage, alteration, and theft.
- (f) All computer hardware used to ensure backup should be stored in a different location from that containing the working data in an environment that ensures they remain in good condition.
- (g) Where continuing airworthiness management of an aircraft is transferred to another organisation or person, all retained records shall be transferred to the said organisation or person. The time periods prescribed for the retention of records shall continue to apply to the said organisation or person.
- (h) Where a continuing airworthiness management organisation terminates its operation, all retained records shall be transferred to the owner of the aircraft.

M.A.715 Continued validity of approval

- (a) An approval shall be issued for an unlimited duration. It shall remain valid subject to:
 - (1) the organisation remaining in compliance with this Part, in accordance with the provisions related to the handling of findings as specified under paragraph M.A.716 and;
 - (2) the LYCAA being granted access to the organisation to determine continued compliance with this Part, and;
 - (3) the approval not being surrendered or revoked.
- (b) Upon surrender or revocation, the approval certificate shall be returned to the LYCAA.

M.A.716 Findings

- (a) A level 1 finding is any significant non-compliance with LYCAR.Part-M requirements which lowers the safety standard and hazards seriously the flight safety.
- (b) A level 2 finding is any non-compliance with the LYCAR.Part-M requirements which could lower the safety standard and possibly hazard the flight safety.
- (c) After receipt of notification of findings, the holder of the continuing airworthiness management organisation approval shall define a corrective action plan and demonstrate corrective action to the satisfaction of the LYCAA within a period agreed with.

SUBPART H - CERTIFICATE OF RELEASE TO SERVICE — CRS**M.A.801 Aircraft certificate of release to service**

- (a) Except for aircraft released to service by a maintenance organisation approved in accordance with LYCAR.Part-145, the certificate of release to service shall be issued according to this Subpart;
- (b) No aircraft can be released to service unless a certificate of release to service is issued at the completion of any maintenance, when satisfied that all maintenance required has been properly carried out, by:
 - (1) appropriate certifying staff on behalf of the maintenance organisation approved in accordance with Section A, Subpart F of this regulation (LYCAR.Part- M); or
 - (2) by the manufacturer.
 - (3) Reserved.
- (c) Reserved.
- (d) Reserved.
- (e) Reserved.
- (f) A certificate of release to service shall contain as a minimum:
 - (1) basic details of the maintenance carried out; and
 - (2) the date such maintenance was completed; and
 - (3) the identity of the organisation and/or person issuing the release to service, including:
 - (i) the approval reference of the maintenance organisation approved in accordance with Section A, Subpart F of (LYCAR.Part- M) and the certifying staff issuing such a certificate; or
 - (ii) reserved;
 - (4) the limitations to airworthiness or operations, if any.
- (g) By derogation from paragraph (b) and notwithstanding the provisions of point (h), when the maintenance prescribed cannot be completed, a certificate of release to service may be issued within the approved aircraft limitations. Such fact together with any applicable limitations of the airworthiness or the operations shall be entered in the aircraft certificate of release to service before its issue as part of the information required in point (f)4;
- (h) A certificate of release to service shall not be issued in the case of any known non-compliance, which endangers flight safety.

M.A.802 Component certificate of release to service

- (a) A certificate of release to service shall be issued at the completion of any maintenance carried out on an aircraft component in accordance with point M.A.502.
- (b) The authorised release certificate identified as LYCAA Form 1 constitutes the component certificate of release to service, except when such maintenance on aircraft components has been performed in accordance with paragraph M.A.502 (b) in which case the maintenance is subject to aircraft release procedures in accordance with paragraph M.A.801.

M.A.803 Reserved.

SUBPART I AIRWORTHINESS REVIEW CERTIFICATE**M.A.901 Aircraft airworthiness review**

To ensure the validity of the aircraft airworthiness certificate an airworthiness review of the aircraft and its continuing airworthiness records shall be carried out periodically.

- (a) An airworthiness review recommendation is issued in accordance with Appendix III on completion of a satisfactory airworthiness review and is valid for one year.
- (b) An aircraft in a controlled environment is an aircraft (i) continuously managed during the previous 12 months by a unique continuing airworthiness management organisation approved in accordance with Section A, Subpart G, of (LYCAR.Part- M), and (ii) which has been maintained for the previous 12 months by maintenance organisations approved in accordance with Section A, Subpart F of this regulation (LYCAR.Part- M), or with LYCAR.Part-145.
- (c) For all aircraft that are in a controlled environment, the organisation referred to in point (b) managing the continuing airworthiness of the aircraft may, if appropriately approved, and subject to compliance with point (k):
 - (1) issue an airworthiness review recommendation in accordance with paragraph M.A.710, and;
 - (2) reserved;
- (d) The airworthiness review certificate is issued by the LYCAA as part of the process of issuing, continuous validation, or renewing the certificate of airworthiness and after satisfactory assessment of the recommendation made by a continuing airworthiness management organisation appropriately approved in accordance with Section A, Subpart G of (LYCAR.Part-M) sent together with the application from the owner or operator. This recommendation shall be based on an airworthiness review carried out in accordance with paragraph M.A.710;
- (e) Reserved.
- (f) Reserved.
- (g) Reserved.
- (h) Whenever circumstances reveal the existence of a potential safety threat, the LYCAA shall carry out the airworthiness review and issue the airworthiness review certificate itself;
- (i) In addition to point (h), the LYCAA may also carry out the airworthiness review and issue the airworthiness review certificate itself in the following cases:
 - (1) when the aircraft is managed by a continuing airworthiness management organisation approved in accordance with Section A, Subpart G of LYCAR.Part- M located in a third country;
 - (2) reserved.
- (j) When the LYCAA carries out the airworthiness review and/or issues the airworthiness review certificate itself, the owner or operator shall provide the LYCAA with:
 - (1) The documentation required by the LYCAA; and
 - (2) Suitable accommodation at the appropriate location for its personnel; and
 - (3) When necessary, the support of personnel appropriately qualified in accordance with LYCAR.Part-66 or equivalent personnel requirements laid down in point 145.A.30(j)(1) and (2) of LYCAR.Part-145;
- (k) An airworthiness review certificate cannot be issued nor extended if there is evidence or reason to believe that the aircraft is not airworthy.

- (l) The airworthiness review certificate is considered part of the aircraft certificate of airworthiness and shall be carried on board the aircraft along with certificate of airworthiness.

M.A.902 Validity of the airworthiness review certificate

- (a) An airworthiness review certificate becomes invalid if:
- (1) suspended or revoked; or
 - (2) the airworthiness certificate is suspended or revoked; or
 - (3) the aircraft is not on the aircraft register of the State of Libya; or
 - (4) the type certificate under which the airworthiness certificate was issued is suspended or revoked.
- (b) An aircraft must not fly if the airworthiness certificate is invalid or if:
- (1) the continuing airworthiness of the aircraft or any component fitted to the aircraft does not meet the requirements of this Part; or
 - (2) the aircraft does not remain in conformity with the type design approved by the LYCAA; or
 - (3) the aircraft has been operated beyond the limitations of the approved flight manual or the airworthiness certificate, without appropriate action being taken; or
 - (4) the aircraft has been involved in an accident or incident that affects the airworthiness of the aircraft, without subsequent appropriate action to restore airworthiness; or
 - (5) a modification or repair is not in compliance with state of design requirements.
- (c) Upon surrender or revocation, the airworthiness review certificate shall be returned to the LYCAA.

M.A.903 Reserved.

M.A.904 Airworthiness review of aircraft imported into the State of Libya

- (a) When importing an aircraft onto the State of Libya register from a third country, the applicant shall:
- (1) apply to the LYCAA for the issuance of a new airworthiness certificate in accordance with the applicable regulations; and
 - (2) for aircraft other than new, have an airworthiness review carried out satisfactorily in accordance with point M.A.901; and
 - (3) have all maintenance carried out to comply with the approved maintenance programme in accordance with paragraph M.A.302.
- (b) When satisfied that the aircraft is in compliance with the relevant requirements, the continuing airworthiness management organisation, if applicable, shall send a documented recommendation for the issuance of an airworthiness review certificate to the LYCAA.
- (c) The owner shall allow access to the aircraft for inspection by the LYCAA.
- (d) A new airworthiness certificate will be issued by the LYCAA when it is satisfied the aircraft complies with the LYCAR.Part-21.
- (e) The LYCAA shall also issue the airworthiness review certificate valid normally for one year unless the LYCAA has safety reason to limit the validity.

M.A.905 Findings

- (f) A level 1 finding is any significant non-compliance with LYCAR Part- M requirements, which lowers the safety standard and hazards seriously the flight safety.
- (g) A level 2 finding is any non-compliance with the LYCAR Part- M requirements, which could lower the safety standard and possibly hazard the flight safety.
- (h) After receipt of notification of findings, the person or organisation accountable referred to in paragraph M.A.201 shall define a corrective action plan and demonstrate corrective action to the satisfaction of the LYCAA within a period agreed with this authority including appropriate corrective action to prevent reoccurrence of the finding and its root cause.

Appendix I

Continuing Airworthiness Arrangement

1. When an owner contracts LYCAR.Part-M. Section. A. Subpart G approved continuing airworthiness organisation in accordance with paragraph M.A.201 to carry out continuing airworthiness management tasks, upon request by the LYCAA a copy of the arrangement shall be sent by the owner to the LYCAA once it has been signed by both parties.
2. The arrangement shall be developed taking into account the requirements of LYCAR.Part- M and shall define the obligations of the signatories in relation to continuing airworthiness of the aircraft.
3. It shall contain as a minimum the:
 - aircraft registration,
 - aircraft type,
 - aircraft serial number,
 - aircraft owner or registered lessee's name or company details including the address,
 - M.A. Subpart G approved continuing airworthiness organisation details including the address.

4. It shall state the following:

‘The owner entrusts to the approved organisation the management of the continuing airworthiness of the aircraft, the development of a maintenance programme that shall be approved by the airworthiness authorities of the State where the aircraft is registered, and the organisation of the maintenance of the aircraft according to said maintenance programme in an approved organisation.

According to the present arrangement, both signatories undertake to follow the respective obligations of this arrangement.

The owner certifies, to the best of their belief that all the information given to the approved organisation concerning the continuing airworthiness of the aircraft is and will be accurate and that the aircraft will not be altered without prior approval of the approved organisation.

In case of any non-conformity with this arrangement, by either of the signatories, it will become null. In such a case, the owner will retain full responsibility for every task linked to the continuing airworthiness of the aircraft and the owner will undertake to inform the LYCAA within two full weeks.’

5. When an owner contracts an paragraph M.A. Subpart G approved continuing airworthiness organisation in accordance with paragraph M.A.201 the obligations of each party shall be shared as follows:
 - 5.1. Obligations of the approved organisation:
 1. Have the aircraft type in the scope of its approval;
 2. Respect the conditions to maintain the continuing airworthiness of the aircraft listed below:
 - (a) Develop a maintenance programme for the aircraft, including any reliability programme developed, if applicable;
 - (b) Reserved.
 - (c) Organise the approval of the aircraft’s maintenance programme;

-
- (d) Once it has been approved, give a copy of the aircraft's maintenance programme to the owner;
 - (e) Organise a bridging inspection with the aircraft's prior maintenance programme;
 - (f) Organise for all maintenance to be carried out by an approved maintenance organisation;
 - (g) Organise for all applicable airworthiness directives to be applied;
 - (h) Organise for all defects discovered during scheduled maintenance, airworthiness reviews or reported by the owner to be corrected by an approved maintenance organisation;
 - (i) Coordinate scheduled maintenance, the application of airworthiness directives, the replacement of life limited parts, and component inspection requirements;
 - (j) Inform the owner each time the aircraft shall be brought to an approved maintenance organisation;
 - (k) Manage all technical records;
 - (l) Archive all technical records;
3. Organise the approval of any modification to the aircraft in accordance with the data approved by the state responsible for the type design before it is embodied;
 4. Organise the approval of any repair to the aircraft in accordance with the data approved by the state responsible of the type design before it is carried out;
 5. Inform the LYCAA whenever the aircraft is not presented to the approved maintenance organisation by the owner as requested by the approved organisation;
 6. Inform the LYCAA whenever the present arrangement has not been respected;
 7. Carry out the airworthiness review of the aircraft when necessary and issue the airworthiness review certificate or the recommendation to the LYCAA;
 8. Send within 10 days a copy of any airworthiness review certificate issued or extended to the LYCAA;
 9. Carry out all occurrence reporting mandated by applicable regulations;
 10. Inform the LYCAA whenever the present arrangement is denounced by either party.
- 5.2. Obligations of the owner
1. have a general understanding of the approved maintenance programme;
 2. have a general understanding of this regulation(LYCAR.Part-M);
 3. present the aircraft to the approved maintenance organisation agreed with the approved organisation at the due time designated by the approved organisation's request;
 4. not modify the aircraft without first consulting the approved organisation;
 5. inform the approved organisation of all maintenance exceptionally carried out without the knowledge and control of the approved organisation;
 6. report to the approved organisation through the logbook all defects found during operations;
 7. inform the LYCAA whenever the present arrangement is denounced by either party;
 8. inform the LYCAA and the approved organisation whenever the aircraft is sold;
 9. carry out all occurrence reporting mandated by applicable regulations;
-

10. inform on a regular basis the approved organisation about the aircraft flying hours and any other utilisation data, as agreed with the approved organisation;
11. reserved.
12. reserved.

Appendix II**Authorised Release Certificate LYCAA Form 1**

These instructions relate only to the use of the LYCAA Form 1 for maintenance purposes.

1. PURPOSE AND USE

- 1.1. The primary purpose of the Certificate is to declare the airworthiness of maintenance work undertaken on products, parts, and appliances (hereafter referred to as 'item(s)').
- 1.2. Correlation must be established between the Certificate and the item(s). The originator must retain a Certificate in a form that allows verification of the original data.
- 1.3. The Certificate is acceptable to many airworthiness authorities, but may be dependent on the existence of bilateral agreements and/or the policy of the airworthiness authority. The 'approved design data' mentioned in this Certificate then means approved by the airworthiness authority of the importing country.
- 1.4. The Certificate is not a delivery or shipping note.
- 1.5. Aircraft are not to be released using the Certificate.
- 1.6. The Certificate does not constitute approval to install the item on a particular aircraft, engine, or propeller but helps the end user determine its airworthiness approval status.
- 1.7. A mixture of production released and maintenance-released items is not permitted on the same Certificate.

2. GENERAL FORMAT

- 2.1. The Certificate must comply with the format attached including block numbers and the location of each block.

The size of each block may however be varied to suit the individual application, but not to the extent that would make the Certificate unrecognisable.

- 2.2. The Certificate must be in 'landscape' format but the overall size may be significantly increased or decreased so long as the Certificate remains recognisable and legible. If in doubt, consult the LYCAA.
- 2.3. The User/Installer responsibility statement can be placed on either side of the form.
- 2.4. All printing must be clear and legible to permit easy reading.
- 2.5. The Certificate may either be pre-printed or computer generated but in either case the printing of lines and characters must be clear and legible and in accordance with the defined format.
- 2.6. The Certificate should be in English, and if appropriate, in one or more other languages.
- 2.7. The details to be entered on the Certificate may be either machine/ computer printed or hand-written using block letters and must permit easy reading.
- 2.8. Limit the use of abbreviations to a minimum, to aid clarity.
- 2.9. The space remaining on the reverse side of the Certificate may be used by the originator for any additional information but must not include any certification statement. Any use of the reverse side of the Certificate must be referenced in the appropriate block on the front side of the Certificate

3. COPIES

- 3.1. There is no restriction in the number of copies of the Certificate sent to the customer or retained by the originator.

4. ERROR(S) ON A CERTIFICATE

- 4.1. If an end-user finds an error(s) on a Certificate, he must identify it/them in writing to the originator. The originator may issue a new Certificate only if the error(s) can be verified and corrected.

- 4.2. The new Certificate must have a new tracking number, signature, and date.
- 4.3. The request for a new Certificate may be honoured without re-verification of the item(s) condition. The new Certificate is not a statement of current condition and should refer to the previous Certificate in block 12 by the following statement; 'This Certificate corrects the error(s) in block(s) [enter block(s) corrected] of the Certificate [enter original tracking number] dated [enter original issuance date] and does not cover conformity/condition/release to service'. Both Certificates should be retained according to the retention period associated with the first.

5. COMPLETION OF THE CERTIFICATE BY THE ORIGINATOR

Block 1 Approving Competent Authority/Country

State the name and country of the competent authority (LYCAA) under whose jurisdiction this Certificate is issued.

Block 2 LYCAA Form 1 header

'AUTHORISED RELEASE CERTIFICATE LYCAA FORM 1'

Block 3 Form Tracking Number

Enter the unique number established by the numbering system/procedure of the organisation identified in block 4; this may include alpha/numeric characters.

Block 4 Organisation Name and Address

Enter the full name and address of the approved organisation (refer to LYCAA Form 3) releasing the work covered by this

Certificate. Logos, etc., are permitted if the logo can be contained within the block.

Block 5 Work Order/Contract/Invoice

To facilitate customer traceability of the item(s), enter the work order number, contract number, invoice number, or similar reference number.

Block 6 Item

Enter line item numbers when there is more than one line item. This block permits easy cross-referencing to the Remarks block 12.

Block 7 Description

Enter the name or description of the item. Preference should be given to the term used in the instructions for continued airworthiness or maintenance data (e.g. Illustrated Parts Catalogue, Aircraft Maintenance Manual, Service Bulletin, and Component Maintenance Manual).

Block 8 Part Number

Enter the part number as it appears on the item or tag/packaging. In case of an engine or propeller, the type designation may be used.

Block 9 Quantity

State the quantity of items.

Block 10 Serial Number

If the item is required by regulations to be identified with a serial number, enter it here. Additionally, any other serial

number not required by regulation may also be entered. If there is no serial number identified on the item, enter 'N/A'.

Block 11 Status/Work

The following describes the permissible entries for block 11. Enter only one of these terms – where more than one may be applicable, use the one that most accurately describes the majority of the work performed and/or the status of the article.

(i)	Overhauled		Means a process that ensures the item is in complete conformity with all the applicable service tolerances specified in the type certificate holder's, or equipment manufacturer's instructions for continued airworthiness, or in the data which is approved or accepted by the Authority. The item will be at least disassembled, cleaned, inspected, repaired as necessary, reassembled and tested in accordance with the above specified data.
(ii)	Repaired		Rectification of defect(s) using an applicable standard ⁽¹⁾ .
(iii)	Inspected/Tested		Examination, measurement, etc. in accordance with an applicable standard ⁽¹⁾ (e.g. visual inspection, functional testing, bench testing etc.).
(iv)	Modified		Alteration of an item to conform to an applicable standard ⁽¹⁾ .

⁽¹⁾ Applicable standard means a manufacturing/design/maintenance/quality standard, method, technique or practice approved by or acceptable to the Competent Authority. The applicable standard shall be described in block 12.

Block 12 Remarks

Describe the work identified in Block 11, either directly or by reference to supporting documentation, necessary for the user or installer to determine the airworthiness of item(s) in relation to the work being certified. If necessary, a separate sheet may be used and referenced from the main LYCAA Form 1. Each statement must clearly identify which item(s) in Block 6 it relates to.

Examples of information to be entered in block 12 are:

- (i) Maintenance data used, including the revision status and reference.
- (ii) Compliance with airworthiness directives or service bulletins.
- (iii) Repairs carried out.
- (iv) Modifications carried out.
- (v) Replacement parts installed.
- (vi) Life limited parts status.
- (vii) Deviations from the customer work order.
- (viii) Release statements to satisfy a foreign Civil Aviation Authority maintenance requirement.
- (ix) Information needed to support shipment with shortages or re-assembly after delivery.
- (x) For maintenance organisations approved in accordance with Subpart F of this regulation (LYCAR.PART- M), the component certificate of release to service statement referred to in point M.A.613:

'Certifies that, unless otherwise specified in this block, the work identified in block 11 and described in this block was accomplished in accordance to the requirements of Section A, Subpart F of this regulation (LYCAR.PART-M) and in respect to that work the item is considered ready for release to service. THIS IS NOT A RELEASE UNDER LYCAA CAR.145. If printing the data from an electronic LYCAA Form 1, any appropriate data not fit for other blocks should be entered in this block.

Block 13a-13e

General Requirements for blocks 13a-13e: Not used for maintenance release. Shade, darken, or otherwise mark to preclude inadvertent or unauthorised use.

Block 14a

Mark the appropriate box(s) indicating which regulations apply to the completed work. If the box 'other regulations specified in block 12' is marked, then the regulations of the other airworthiness authority(ies) must be identified in block 12. At least one box must be marked, or both boxes may be marked, as appropriate.

For all maintenance carried out by maintenance organisations approved in accordance with Section A, Subpart F of this regulation (LYCAR Part-M), the box 'other regulation specified in block 12' shall be ticked and the certificate of release to service statement made in block 12. In that case, the certification statement 'unless otherwise specified in this block' is intended to address the following cases;

- (a) Where the maintenance could not be completed.
- (b) Where the maintenance deviated from the standard required by this regulation (LYCAR.Part- M).
- (c) Reserved .

For all maintenance carried out by maintenance organisations approved in accordance with Section A of LYCAR.Part- 145, the certification statement 'unless otherwise specified in block 12' is intended to address the following cases:

- (a) Where the maintenance could not be completed.
- (b) Where the maintenance deviated from the standard required by LYCAR.Part-145.
- (c) Where the maintenance was carried out in accordance with a requirement other than that specified in LYCAR.Part-145. In this case block 12 shall specify the particular national regulation.

Block 14b Authorised Signature

This space shall be completed with the signature of the authorised person. Only persons specifically authorised under the rules and policies of the LYCAA are permitted to sign this block. To aid recognition, a unique number identifying the authorised person may be added.

Block 14c Certificate/Approval Number

Enter the Certificate/Approval number/reference. This number or reference is issued by the LYCAA.

Block 14d Name

Enter the name of the person signing block 14b in a legible form.

Block 14e Date

Enter the date on which block 14b is signed, the date must be in the format dd = 2 digit day, mmm = first 3 letters of the month, yyyy = 4 digit year

User/Installer Responsibilities

Place the following statement on the Certificate to notify end users that they are not relieved of their responsibilities concerning installation and use of any item accompanied by the form:

'THIS CERTIFICATE DOES NOT AUTOMATICALLY CONSTITUTE AUTHORITY TO INSTALL.

WHERE THE USER/INSTALLER PERFORMS WORK IN ACCORDANCE WITH REGULATIONS OF AN AIRWORTHINESS AUTHORITY DIFFERENT THAN THE AIRWORTHINESS AUTHORITY SPECIFIED IN BLOCK 1, IT IS ESSENTIAL THAT THE USER/INSTALLER ENSURES THAT HIS/HER AIRWORTHINESS AUTHORITY ACCEPTS ITEMS FROM THE AIRWORTHINESS AUTHORITY SPECIFIED IN BLOCK 1.

STATEMENTS IN BLOCKS 13A AND 14A DO NOT CONSTITUTE INSTALLATION CERTIFICATION. IN ALL CASES AIRCRAFT MAINTENANCE RECORDS MUST CONTAIN AN INSTALLATION CERTIFICATION ISSUED IN ACCORDANCE WITH THE NATIONAL REGULATIONS BY THE USER/INSTALLER BEFORE THE AIRCRAFT MAY BE FLOWN.'

<p>1. </p>	<p>2. AUTHORISED RELEASE CERTIFICATE</p> <p>LYCAA FORM 1</p>				<p>3. Form Tracking Number</p>	
<p>4. Approved Organisation Name and Address:</p> <p>.....</p> <p>.....</p>					<p>5. Work Order/Contract/Invoice</p> <p>.....</p>	
<p>6. Item</p>	<p>7. Description</p>	<p>8. Part No.</p>	<p>9. Qty</p>	<p>10. Serial No.</p>	<p>11. Status/Work</p>	
<p>.....</p> <p>.....</p> <p>.....</p>	<p>.....</p> <p>.....</p> <p>.....</p>	<p>.....</p> <p>.....</p> <p>.....</p>	<p>.....</p> <p>.....</p> <p>.....</p>	<p>.....</p> <p>.....</p> <p>.....</p>	<p>.....</p> <p>.....</p> <p>.....</p>	
<p>12. Remarks</p> <p>.....</p> <p>.....</p> <p>.....</p>						
<p>13a. Certifies that the items identified above were manufactured in conformity to: approved design data and are in a condition for safe operation non-approved design data specified in block 12</p>			<p>14a</p>	<p>LYCAR PART 145.A.50 Release to Service Other regulation specified in block12</p> <p>certifies that unless otherwise specified in block 12, the work identified in block 11 and described in block 12, was accomplished in accordance with Part-145 and in respect to that work the items are considered ready for release to service.</p>		

13b. Authorised Signature <input type="checkbox"/> <input type="checkbox"/>	13c. Approval/Authorisation Number 	14b. Authorised Signature 	14c. Certificate/Approval Ref. No. <input type="checkbox"/>
13d. Name 	13e. Date (dd mm yyyy) 	14d. Name 	14e. Date (dd mm yyyy)
USER/INSTALLER RESPONSIBILITIES			
.....			

This certificate does not automatically constitute authority to install the item(s).

Where the user/installer performs work in accordance with regulations of an airworthiness authority different than the airworthiness authority specified in block 1, it is essential that the user/installer ensures that his/her airworthiness authority accepts items from the airworthiness authority specified in block 1.

Statements in blocks 13a and 14a do not constitute installation certification. In all cases aircraft maintenance records must contain an installation certification issued in accordance with the national regulations by the user/installer before the aircraft may be flown.

STATE OF LIBYA



AIRWORTHINESS REVIEW CERTIFICATE

ARC reference:

Pursuant to Civil Aviation law and regulations for the time being into force, the LYCAA has issued an airworthiness review certificate (ARC) for the following aircraft :

Aircraft manufacturer :

Manufacturer's designation :

Aircraft registration :

MSN.....

and this aircraft is considered airworthy at the time of the review.

Date of issue :

Date of expiry :

Signature:

Appendix III
Airworthiness Review Certificate — LYCAA Form 15a

LYCAA Form 15a STATE OF LIBYA



AIRWORTHINESS REVIEW RECOMMENDATION

ARR reference:

Pursuant to Civil Aviation law and regulations for the time being into force, [COMPANY NAME]
CONTINUING AIRWORTHINESS MANAGEMENT ORGANIZATION CAMO Approval
no.....

Has performed an airworthiness review according to the paragraph M.A 710 on the following
aircraft : Aircraft manufacturer:
..... Manufacturer's
designation :

Aircraft registration :

MSN.....

The aircraft has remained in an controlled environment according to paragraph M.A 901 for the
last year. And the aircraft is considered to be airworthy at the time of issue.

Date of issue : Date of expiry :

Signature:

LYCAA Form 15a

Appendix IV

Class and Ratings System to be used for the Approval of Maintenance Organisations referred to in LYCAR.PART-M Subpart F and LYCAR.PART-145)

- (1) Except as stated otherwise for the smallest organisations in point 12, the table referred to in point 13 provides the standard system for the approval of maintenance organisation under Subpart F of the LYCAR M regulation and LYCAR.145. An organisation must be granted an approval ranging from a single class and rating with limitations to all classes and ratings with limitations.
- (2) In addition to the table referred to in point 13, the approved maintenance organisation is required to indicate its *scope of work* in its maintenance organisation manual/exposition. See also paragraph 11.
- (3) Within the approval class(es) and rating(s) granted by the LYCAA, the scope of work specified in the maintenance organisation exposition defines the exact limits of approval. It is therefore essential that the approval class(es) and rating(s) and the organisations scope of work are matching.
- (4) A *category A class rating* means that the approved maintenance organisation may carry out maintenance on the aircraft and any component (including engines and/or Auxiliary Power Units (APU's), in accordance with aircraft maintenance data or, if agreed by the LYCAA, in accordance with component maintenance data, only whilst such components are fitted to the aircraft. Nevertheless, such A-rated approved maintenance organisation may temporarily remove a component for maintenance, in order to improve access to that component, except when such removal generates the need for additional maintenance not eligible for the provisions of this paragraph. This will be subject to a control procedure in the maintenance organisation exposition to be approved by the LYCAA. The limitation section will specify the scope of such maintenance thereby indicating the extent of approval.
- (5) A *category B class rating* means that the approved maintenance organisation may carry out maintenance on the uninstalled engine and/or APU and engine and/or APU components, in accordance with engine and/or APU maintenance data or, if agreed by the LYCAA, in accordance with component maintenance data, only whilst such components are fitted to the engine and/or APU. Nevertheless, such B-rated approved maintenance organisation may temporarily remove a component for maintenance, in order to improve access to that component, except when such removal generates the need for additional maintenance not eligible for the provisions of this paragraph. The limitation section will specify the scope of such maintenance thereby indicating the extent of approval. A maintenance organisation approved with a category B class rating may also carry out maintenance on an installed engine during 'base' and 'line' maintenance subject to a control procedure in the maintenance organisation exposition to be approved by the LYCAA. The maintenance organisation exposition scope of work shall reflect such activity where permitted by the LYCAA.

- (6) A *category C class rating* means that the approved maintenance organisation may carry out maintenance on uninstalled components (excluding engines and APUs) intended for fitment to the aircraft or engine/APU. The limitation section will specify the scope of such maintenance thereby indicating the extent of approval. A maintenance organisation approved with a category C class rating may also carry out maintenance on an installed component during base and line maintenance or at an engine/APU maintenance facility subject to a control procedure in the maintenance organisation exposition to be approved by the LYCAA. The maintenance organisation exposition scope of work shall reflect such activity where permitted by the LYCAA.
- (7) A *category D class rating* is a self contained class rating not necessarily related to a specific aircraft, engine or other component. The D1 — Non Destructive Testing (NDT) rating is only necessary for an approved maintenance organisation that carries out NDT as a particular task for another organisation. A maintenance organisation approved with a class rating in A or B or C category may carry out NDT on products it is maintaining subject to the maintenance organisation exposition containing NDT procedures, without the need for a D1 class rating.
- (8) In the case of maintenance organisations approved in accordance with LYCAR.145, *category A class ratings* are subdivided into 'Base' or 'Line' maintenance. Such an organisation may be approved for either 'Base' or 'Line' maintenance or both. It should be noted that a 'Line' facility located at a main base facility requires a 'Line' maintenance approval.
- (9) The *limitation* section is intended to give the competent authorities the flexibility to customise the approval to any particular organisation. Ratings shall be mentioned on the approval only when appropriately limited. The table referred to in point 13 specifies the types of limitation possible. Whilst maintenance is listed last in each class rating it is acceptable to stress the maintenance task rather than the aircraft or engine type or manufacturer, if this is more appropriate to the organisation (an example could be avionic systems installations and related maintenance). Such mention in the limitation section indicates that the maintenance organisation is approved to carry out maintenance up to and including this particular type/task.
- (10) When reference is made to *series, type and group* in the limitation section of class A and B, series means a specific type series such as Airbus 300 or 310 or 319 or Boeing 737-300 series or RB211-524 series or Cessna 150 or Cessna 172 or Beech 55 series or continental O-200 series etc; type means a specific type or model such as Airbus 310-240 type or RB 211-524 B4 type or Cessna 172RG type; any number of series or types may be quoted; group means for example Cessna single piston engine aircraft or Lycoming non-supercharged piston engines etc.
- (11) When a *lengthy capability list* is used which could be subject to frequent amendment, then such amendment may be in accordance with the indirect approval procedure referred to in paragraphs M.A.604(c) or 145.A.70(c), as applicable.
- (12) A maintenance organisation which employs only one person to both plan and carry out all maintenance can only hold a limited scope of approval rating. The maximum permissible limits are:

CLASS	RATING	LIMITATION
CLASS AIRCRAFT	RATING A2 AEROPLANES	PISTON ENGINED 5700 KG AND BELOW
CLASS AIRCRAFT	RATING A3 SINGLE ENGINED HELICOPTERS	PISTON ENGINED 3175 KG AND BELOW
CLASS AIRCRAFT	RATING A4 AIRCRAFT OTHER THAN A1, A2 AND A3	NO LIMITATION
CLASS ENGINES	RATING B2 PISTON	LESS THAN 450 HP
CLASS COMPONENTS RATING OTHER THAN COMPLETE ENGINES OR APUs	C1 TO C20	AS PER CAPABILITY LIST
CLASS SPECIALISED	D1 NDT	NDT METHOD(S) TO BE SPECIFIED

It should be noted that such an organisation may be further limited by the LYCAA in the scope of approval dependent upon the capability of the particular organisation.

(13) Table 1

CLASS	RATING	LIMITATION	BASE	LINE
AIRCRAFT	A1 Aeroplanes above 5700 kg	[Rating reserved to Maintenance Organisations approved in accordance with Ly CAR.145] [Shall state airplane manufacturer or group or series or type and/or the maintenance tasks] <i>Example: Airbus A320 Series</i>	(YES/NO)	(YES/NO)
	A2 Aeroplanes 5 700 kg and below	Shall state aeroplane manufacturer or group or series or type and/or the maintenance tasks <i>Example: DHC-6 Twin Otter Series</i>	(YES/NO)	(YES/NO)
	A3 Helicopters	Shall state helicopter manufacturer or group or series or type and/or the maintenance task(s) <i>Example: Robinson 44</i>	(YES/NO)	(YES/NO)
	A4 Aircraft other than A1, A2 and A3	Shall state aircraft series or type and/or the maintenance task(s)	(YES/NO)	(YES/NO)
ENGINES	B1 Turbine	Shall state engine series or type and/or the maintenance task(s) <i>Example: PT6A Series</i>		

	B2 Piston	Shall state engine manufacturer or group or series or type and/or the maintenance task(s)
	B3 APU	Shall state engine manufacturer or group or series or type and/or the maintenance task(s)
	C1 Air Cond & Press	[Shall state aircraft type or aircraft manufacturer or component manufacturer or the particular component and/or
	C2 Auto Flight	

COMPONENTS OTHER THAN COMPLETE ENGINES OR APUs	C3 Comms and Nav	cross-refer to a capability list in the exposition and/or the maintenance task(s).] <i>Example: PT6A Fuel Control</i>
	C4 Doors — Hatches	
	C5 Electrical Power	
	C6 Equipment	
	C7 Engine — APU	
	C8 Flight Controls	
	C9 Fuel — Airframe	
	C10 Helicopter Rotors	
	C11 Helicopter — Trans	
	C12 Hydraulic	
	C13 Instruments	
	C14 Landing Gear	
	C15 Oxygen	
	C16 Propellers	
	C17 Pneumatic	
	C18 Protection ice/rain/fire	
	C19 Windows	
C20 Structural		
SPECIALISED SERVICES	D1 Non-Destructive Testing	Shall state particular NDT method(s)

Appendix VI
**Continuing Airworthiness Management Organisation Approval referred
to in Annex I (Part-M) Subpart G**

STATE OF LIBYA



MAINTENANCE ORGANISATION APPROVAL CERTIFICATE

Reference:

Pursuant to LYCAR.Part-M for the time being into force and subject to the conditions specified below, the LYCAA hereby certifies:

[COMPANY NAME AND ADDRESS]

as a maintenance organisation in compliance with Section A, Subpart F of LYCAR.Part-M, approved to maintain the products, parts and appliances listed in the attached approval schedule and issue related certificates of release to service using the above references.

CONDITIONS

1. This approval is limited to that specified in the scope of work section of the approved maintenance organisation manual as referred to in Section A of Subpart F of LYCAR.Part-M, and
2. This approval requires compliance with the procedure specified in the approved maintenance organisation manual, and
3. This approval is valid whilst the approved maintenance organisation remains in compliance with LYCAR.Part-M.
4. Subject to compliance with the foregoing conditions, this approval shall remain valid for an unlimited duration unless the approval has previously been surrendered, superseded, suspended, or revoked.

Date of the original
issue:..... Date of the
revision:

Revision No:

..... Signed:
 For the LYCAA:

LYCAA Form 3

MAINTENANCE ORGANISATION APPROVAL SCHEDULE

Reference: ...

Organisation: [COMPANY NAME AND ADDRESS]

CLASS	RATING	LIMITATION
AIRCRAFT (**)	(***)	(***)
	(***)	(***)
ENGINES (**)	(***)	(***)
	(***)	(***)
COMPONENTS OTHER THAN COMPLETE ENGINE OR APUs (**)	(***)	(***)
	(***)	(***)
	(***)	(***)
	(***)	(***)
	(***)	(***)
	(***)	(***)
SPECIALISED SERVICES (**)	(***)	(***)
	(***)	(***)

This approval is limited to the products, parts, and appliances and to the activities specified in the scope of work section of the approved maintenance organisation manual. Maintenance

Organisation Manual reference:

 Date of original issue:

 Date of last revision approved:
 Revision No.....
 Signed: For the competent authority / LYCAA:
 (**) delete as appropriate if the organisation is not approved
 (***) complete with appropriate rating and limitation

LYCAA Form 3

Continuing Airworthiness Management Organisation Approval a referred to in LYCAR.Part-M Subpart G

STATE OF LIBYA



CONTINUING AIRWORTHINESS MANAGEMENT ORGANISATION APPROVAL CERTIFICATE

Reference: ...

Pursuant to LYCAR.Part-M Regulation for the time being into force and subject to the conditions specified below, the Libyan Civil Aviation Authority hereby certifies:

[COMPANY NAME AND ADDRESS]

as a continuing airworthiness management organisation in compliance with Section A, Subpart G of LYCAR.Part- M, approved to manage the continuing airworthiness of the aircraft listed in the attached schedule of approval and, when stipulated, to issue recommendations and airworthiness review certificates after an airworthiness review as specified in point M.A.710 of this regulation LYCAR.Part- M, and, when stipulated, to issue permits to fly as specified in point M.A.711c of LYCAR.Part- M.

CONDITIONS

1. This approval is limited to that specified in the scope of the approval section of the approved continuing airworthiness management exposition as referred to in Section A, Subpart G of LYCAR.Part- M.
2. This approval requires compliance with the procedure specified in this regulation LYCAR.Part-M approved continuing airworthiness management exposition.

3. This approval is valid whilst the approved continuing airworthiness management organisation remains in compliance with this regulation LYCAR Part-M.

4. Where the continuing airworthiness management organisation contracts under its Quality System the services of an/several organisation(s), this approval remains valid subject to such organisation(s) fulfilling applicable contractual obligations.

5. Subject to compliance with the conditions, 1 and 4 above, this approval shall remain valid for an unlimited duration unless the approval has previously been surrendered, superseded, suspended or revoked.

If this form is also used for AOC holders, the AOC number shall be added to the reference, in addition to the standard number, and the condition 5 shall be replaced by the following extra condition:

6. This approval does not constitute an authorisation to operate the types of aircraft referred in point 1. The authorisation to operate the aircraft is the Air Operator Certificate (AOC).

7. Termination, suspension, or revocation of the AOC automatically invalidates the present approval in relation to the aircraft registration specified in the AOC. Unless otherwise explicitly stated by the competent authority.

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

Date of issue:

Date of the renewal:

Signed: For the LYCAA

: LYCAA Form 14

CONTINUING AIRWORTHINESS MANAGEMENT ORGANISATION APPROVAL SCHEDULE

Reference:

Organisation: [COMPANY NAME AND ADDRESS]

Aircraft type/	Airworthiness	Organisation(s) working under quality system

This approval schedule is limited to that specified in the scope of approval contained in the approved

Continuing Airworthiness Management Exposition section

.....

Continuing Airworthiness Management Exposition reference:

Date of issue:
 date of renewal.....

Signed:

For the LYCAA:

(**) delete as appropriate if the organisation is not approved.

LYCAA Form 14

Appendix VII Complex Maintenance Tasks

The following constitutes the complex maintenance tasks:

1. The modification, repair or replacement by riveting, bonding, laminating, or welding of any of the following airframe parts:
 - (a) A box beam;
 - (b) A wing stringer or chord member;
 - (c) A spar;
 - (d) A spar flange;
 - (e) A member of a truss-type beam;
 - (f) The web of a beam;
 - (g) A keel or chine member of a flying boat hull or a float;
 - (h) A corrugated sheet compression member in a wing or tail surface;
 - (i) A wing main rib;
 - (j) A wing or tail surface brace strut;
 - (k) An engine mount;
 - (l) A fuselage longeron or frame;
 - (m) A member of a side truss, horizontal truss or bulkhead;
 - (n) A seat support brace or bracket;
 - (o) A seat rail replacement;
 - (p) A landing gear strut or brace strut; (
 - (q) An axle;
 - (r) A wheel; and
 - (s) A ski or ski pedestal, excluding the replacement of a low-friction coating.
2. The modification or repair of any of the following parts:
 - (a) Aircraft skin, or the skin of an aircraft float, if the work requires the use of a support, jig or fixture;
 - (b) Aircraft skin that is subject to pressurization loads, if the damage to the skin measures more than 15 cm (6 inches) in any direction;
 - (c) A load-bearing part of a control system, including a control column, pedal, shaft, quadrant, bell crank, torque tube, control horn and forged or cast bracket, but excluding
 - (i) The swaging of a repair splice or cable fitting, and
 - (ii) The replacement of a push-pull tube end fitting that is attached by riveting; and
 - (d) Any other structure, not listed in (1), that a manufacturer has identified as primary structure in its maintenance manual, structural repair manual or instructions for continuing airworthiness.
3. The performance of the following maintenance on a piston engine:
 - (a) Dismantling and subsequent reassembling of a piston engine other than (i) to obtain access to the piston/cylinder assemblies; or (ii) to remove the rear accessory cover to inspect and/or replace oil pump assemblies, where such work does not involve the removal and re-fitment of internal gears;

- (b) Dismantling and subsequent reassembling of reduction gears;
 - (c) Welding and brazing of joints, other than minor weld repairs to exhaust units carried out by a suitably approved or authorised welder but excluding component replacement;
 - (d) The disturbing of individual parts of units which are supplied as bench tested units, except for the replacement or adjustment of items normally replaceable or adjustable in service.
4. The balancing of a propeller, except:
- (a) For the certification of static balancing where required by the maintenance manual;
 - (b) Dynamic balancing on installed propellers using electronic balancing equipment where permitted by the maintenance manual or other approved airworthiness data;
5. Any additional task that requires:
- (a) Specialized tooling, equipment or facilities; or
 - (b) Significant coordination procedures because of the extensive duration of the tasks and the involvement of several persons.

PART – 145 - MAINTENANCE ORGANISATION APPROVALS

SECTION A TECHNICAL REQUIREMENTS

145.1 General

1. Organisations involved in the maintenance of all aircraft registered in LIBYA for all categories of operations, except aircraft below 5700 kg maximum certificated take-off mass (MCTOM) in non-commercial air transport, and components intended for fitment thereto, shall be approved in accordance with LYCAR.Part-145.
2. Unless maintained by LYCAR.Part-145 organisation, non-commercial air transport category aircraft below 5700 kg MCTOM shall comply with the requirement stipulated in LYCAR.Part-M Sub-Part-F. The approved maintenance organisation shall establish procedures acceptable to LYCAA to comply with the applicable requirements and provisions stipulated in LYCAR.Part-M.
3. The approved maintenance organisations shall establish a reporting system to comply with LYCAR requirements.

145. A.10 Scope

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

145. A.15 Application

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

145. A.20 Terms of Approval

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

145. A.25 Facility requirements

The organisation shall ensure that:

- (a) Facilities are provided appropriate for all planned work, ensuring in particular, protection from the weather elements. Specialised workshops and bays are segregated as appropriate, to ensure that environmental and work area contamination is unlikely to occur.
 - (1) For base maintenance of aircraft, aircraft hangars are both available and large enough to accommodate aircraft on planned base maintenance;
 - (2) For component maintenance, component workshops are large enough to accommodate the components on planned maintenance.
- (b) Office accommodation is provided for the management of the planned work referred to in point (a), and certifying staff so that they can carry out their designated tasks in a manner that contributes to good aircraft maintenance standards.
- (c) The working environment including aircraft hangars, component workshops, and office accommodation is appropriate for the task carried out and in particular special requirements observed. Unless otherwise dictated by the particular task environment, the working environment must be such that the effectiveness of personnel is not impaired:
 - (1) Temperatures must be maintained such that personnel can carry out required tasks without undue discomfort.

- (2) Dust and any other airborne contamination are kept to a minimum and not be permitted to reach a level in the work task area where visible aircraft/component surface contamination is evident. Where dust/other airborne contamination results in visible surface contamination, all susceptible systems are sealed until acceptable conditions are re-established.
 - (3) Lighting is such as to ensure each inspection and maintenance task can be carried out in an effective manner.
 - (4) Noise shall not distract personnel from carrying out inspection tasks. Where it is impractical to control the noise source, such personnel are provided with the necessary personal equipment to stop excessive noise causing distraction during inspection tasks.
 - (5) Where a particular maintenance task requires the application of specific environmental conditions different to the foregoing, then such conditions are observed. Specific conditions are identified in the maintenance data.
 - (6) The working environment for line maintenance is such that the particular maintenance or inspection task can be carried out without undue distraction. Therefore where the working environment deteriorates to an unacceptable level in respect of temperature, moisture, hail, ice, snow, wind, light, dust/other airborne contamination, the particular maintenance or inspection tasks must be suspended until satisfactory conditions are re-established.
- (d) Secure storage facilities are provided for components, equipment, tools, and material. Storage conditions ensure segregation of serviceable components and material from unserviceable aircraft components, material, equipment, and tools. The conditions of storage are in accordance with the manufacturer's instructions to prevent deterioration and damage of stored items. Access to storage facilities is restricted to authorised personnel.

145. A.30 Personnel requirements

- (a) The organisation shall appoint an accountable manager who has corporate authority for ensuring that all maintenance required by the customer can be financed and carried out to the standard required by this Part. The accountable manager shall:
 - (1) Ensure that all necessary resources are available to accomplish maintenance in accordance with 145.A.65 (b) to support the organisation approval.
 - (2) Establish and promote the safety and quality policy specified in 145.A.65(a).
 - (3) Demonstrate a basic understanding of this Part.
- (b) The organisation shall nominate a person or group of persons, whose responsibilities include ensuring that the organisation complies with this Part. Such person(s) shall ultimately be responsible to the accountable manager.
 - (1) The person or persons nominated shall represent the maintenance management structure of the organisation and be responsible for all functions specified in this Part.
 - (2) The person or persons nominated shall be identified and their credentials submitted in a form and manner established by the LYCAA.
 - (3) The person or persons nominated shall be able to demonstrate relevant knowledge, background and satisfactory experience related to aircraft or component maintenance and demonstrate a working knowledge of this Part.
 - (4) Procedures shall make clear who deputises for any particular person in the case of lengthy absence of the said person.

- (c) The accountable manager under point (a) shall appoint a person with responsibility for monitoring the quality system, including the associated feedback system as required by 145.A.65(c). The appointed person shall have direct access to the accountable manager to ensure that the accountable manager is kept properly informed on quality and compliance matters.
- (d) The organisation shall have a maintenance man-hour plan showing that the organisation has sufficient staff to plan, perform, supervise, inspect and quality monitor the organisation in accordance with the approval. In addition the organisation shall have a procedure to reassess work intended to be carried out when actual staff availability is less than the planned staffing level for any particular work shift or period.
- (e) The organisation shall establish and control the competence of personnel involved in any maintenance, management, and/or quality audits in accordance with a procedure and to a standard agreed by the LYCAA. In addition to the necessary expertise related to the job function, competence must include an understanding of the application of human factors and human performance issues appropriate to that person's function in the organisation. 'Human factors' means principles which apply to aeronautical design, certification, training, operations and maintenance and which seek safe interface between the human and other system components by proper consideration of human performance. 'Human performance' means human capabilities and limitations which have an impact on the safety and efficiency of aeronautical operations.
- (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 LYCAA. 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 paragraphs (g) and (h) (1) and (h) (2), qualified in LYCAR.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 point (j), shall in the case of aircraft line maintenance, have appropriate aircraft rated certifying staff qualified as category B1, B2, B3, as appropriate, in accordance with LYCAR.Part-66 and point 145.A.35.
- In addition such organisations may also use appropriately task trained certifying staff holding the privileges described in points 66.A.20(a)(1) and 66.A.20(a)(3)(ii) and qualified in accordance with LYCAR.PART-66 and point 145.A.35 to carry out minor scheduled line maintenance and simple defect rectification. The availability of such certifying staff shall not replace the need for category B1, B2, B3 certifying staff, as appropriate.
- (h) Any organisation maintaining aircraft, except where stated otherwise in paragraph (j) shall:
- (1) In the case of base maintenance of large aircraft, have appropriate aircraft type rated certifying staff qualified as category C in accordance with LYCAR.Part-66 and 145.A.35. In addition the organisation shall have sufficient aircraft type rated staff qualified as category B1, B2 as appropriate in accordance with LYCAR.Part-66 and 145.A.35 to support the category C certifying staff.
- (i) B1 and B2 support staff shall ensure that all relevant tasks or inspections have been carried out to the required standard before the category C certifying staff issues the certificate of release to service.

- (ii) The organisation shall maintain a register of any such B1 and B2 support staff.
 - (iii) The category C certifying staff shall ensure that compliance with paragraph (i) has been met and that all work required by the customer has been accomplished during the particular base maintenance check or work package, and shall also assess the impact of any work not carried out with a view to either requiring its accomplishment or agreeing with the operator to defer such work to another specified check or time limit.
- (2) In the case of base maintenance of aircraft other than large aircraft have either:
 - (i) Appropriate aircraft rated certifying staff qualified as category B1, B2, B3, as appropriate, in accordance with LYCAR.Part-66 and point 145.A.35; or
 - (ii) Appropriate aircraft rated certifying staff qualified in category C assisted by support staff as specified in point 145.A.35 (a) (i).
- (i) Component certifying staff shall comply with LYCAR.Part-66.
- (j) By derogation to paragraphs (g) and (h), in relation to the obligation to comply with LYCAR.Part-66, the organisation may use certifying staff qualified in accordance with the following provisions:
 - (1) For organisation facilities located outside Libyan territory certifying staff may be qualified in accordance with the national aviation regulations of the ICAO contracting State in which the organisation facility is registered subject to the conditions specified in Appendix IV to this Part.
 - (2) For line maintenance carried out at a line station of an organisation which is located outside the Libyan territory, the certifying staff may be qualified in accordance with the national aviation regulations of the ICAO contracting State in which the line station is based, subject to the conditions specified in Appendix IV to this Part.
 - (3) For a repetitive pre-flight airworthiness directive which specifically states that the flight crew may carry out such airworthiness directive, the organisation may issue a limited certification authorisation to the aircraft commander and/or the flight engineer on the basis of the flight crew licence held. However, the organisation shall ensure that sufficient practical training has been carried out to ensure that such aircraft commander or flight engineer can accomplish the airworthiness directive to the required standard.
 - (4) In the case of aircraft operating away from a supported location the organisation may issue a limited certification authorisation to the commander and/or the flight engineer on the basis of the flight crew licence held subject to being satisfied that sufficient practical training has been carried out to ensure that the commander or flight engineer can accomplish the specified task to the required standard. The provisions of this paragraph shall be detailed in an exposition procedure.
 - (5) In the following unforeseen cases, where an aircraft is grounded at a location other than the main base where no appropriate certifying staff are available, the organisation contracted to provide maintenance support may issue a one-off certification authorisation:
 - (i) To one of its employees holding equivalent type authorisations on aircraft of similar technology, construction and systems; or

- (ii) To any person with not less than five years maintenance experience and holding a valid ICAO aircraft maintenance licence rated for the aircraft type requiring certification provided there is no organisation appropriately approved under this Part at that location and the contracted organisation obtains and holds on file evidence of the experience and the licence of that person.

All such cases as specified in this sub-paragraph shall be reported to the LYCAA within 7 days of the issuance of such certification authorisation. The organisation issuing the one-off authorisation shall ensure that any such maintenance that could affect flight safety is re-checked by an appropriately approved organisation.

145. A.35 Certifying staff and support staff

- (a) In addition to the appropriate requirements of 145.A.30(g) and (h), the organisation shall ensure that certifying staff and support staff have an adequate understanding of the relevant aircraft and/or components to be maintained together with the associated organisation procedures. In the case of certifying staff, this shall be accomplished before the issue or re-issue of the certification authorisation.
 - (i) **'Support staff'** means those staff holding a LYCAR.Part-66 aircraft maintenance engineer licence in category B1, B2 and/or B3 with the appropriate aircraft ratings, working in a base maintenance environment while not necessarily holding certification privileges.
 - (ii) **'Relevant aircraft and/or components'**, means those aircraft or components specified in the particular certification authorisation.
 - (iii) **'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) Excepting those cases listed in points 145.A.30 (j) and 66.A.20 (a) 3(ii) the organisation may only issue a certification authorisation to certifying staff in relation to the basic categories or subcategories and any type rating listed on the aircraft maintenance engineer licence as required by LYCAR.Part-66, subject to the licence remaining valid throughout the validity period of the authorisation and the certifying staff remaining in compliance with LYCAR.Part-66.
- (c) The organisation shall ensure that all certifying staff and support staff are involved in at least 6 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 or aircraft group systems specified in the particular certification authorisation.
- (d) The organisation shall ensure that all certifying staff and support staff receive sufficient continuation training in each two year period to ensure that such staff have up-to-date knowledge of relevant technology, organisation procedures and human factor issues.
- (e) The organisation shall establish a programme for continuation training for certifying staff and 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 LYCAR.Part-66.

- (f) Except where any of the unforeseen cases of 145.A.30(j)(5) apply, the organisation shall assess all prospective certifying staff for their competence, qualification and capability to carry out their intended certifying duties in accordance with a procedure as specified in the exposition prior to the issue or re-issue of a certification authorisation under this Part.
- (g) When the conditions of points (a), (b), (d), (f) and, where applicable, point(c) have been fulfilled by the certifying staff, the organisation shall issue a certification authorisation that clearly specifies the scope and limits of such authorisation. Continued validity of the certification authorisation is dependent upon continued compliance with points (a), (b), (d), and where applicable, point (c).
- (h) The certification authorisation must be in a style that makes its scope clear to the certifying staff and any authorised person who may require to examine the authorisation. Where codes are used to define scope, the organisation shall make a code translation readily available. '**Authorised person**' means the officials of the LYCAA who has responsibility for the oversight of the maintained aircraft or component.
- (i) The person responsible for the quality system shall also remain responsible on behalf of the organisation for issuing certification authorisations to certifying staff. Such person may nominate other persons to actually issue or revoke the certification authorisations in accordance with a procedure as specified in the exposition.
- (j) The organisation shall maintain a record of all certifying staff and support staff, which shall contain:
- (1) The details of any aircraft maintenance licence held under LYCAR.Part-66; and
 - (2) All relevant training completed; and
 - (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 three years after the staff referred to in this paragraph have ceased employment with the organisation or as soon as the authorisation has been withdrawn. In addition, upon request, the maintenance organisation shall furnish the staff referred to in this paragraph with a copy of their personal record on leaving the organisation.
- The staff referred to in this paragraph shall be given access on request to their personal records as detailed above.*
- (k) The organisation shall provide certifying staff with a copy of their certification authorisation in either a documented or electronic format.
- (l) Certifying staff shall produce their certification authorisation to any authorised person within 24 hours.
- (m) The minimum age for certifying staff and support staff is 21 years.
- (n) The holder of a category A aircraft maintenance licence may only exercise certification privileges on a specific aircraft type following the satisfactory completion of the relevant category A aircraft task training carried out by an organisation appropriately approved in accordance with LYCAR.Part-145 or LYCAR.Part-147 This training shall include practical hands on training and theoretical training as appropriate for each task authorised. Satisfactory completion of training shall be demonstrated by an examination or by workplace assessment carried out by the organisation.

- (o) The holder of a category B2 aircraft maintenance licence may only exercise the certification privileges described in point 66.A.20(a)(3)(ii) of LYCAR.Part-66 following the satisfactory completion of (i) the relevant category A aircraft task training and (ii) 6 months of documented practical experience covering the scope of the authorisation that will be issued. The task training shall include practical hands on training and theoretical training as appropriate for each task authorised. Satisfactory completion of training shall be demonstrated by an examination and by workplace assessment. Task training and examination/assessment shall be carried out by the maintenance organisation issuing the certifying staff authorisation. The practical experience shall also be obtained within such maintenance organisation.

145. A.40 Equipment, tools and material

- (a) The organisation shall have available and use the necessary equipment, tools and material to perform the approved scope of work.
- (1) Where the manufacturer specifies a particular tool or equipment, the organisation shall use that tool or equipment, unless the use of alternative tooling or equipment is agreed by the LYCAA via procedures specified in the exposition.
 - (2) Equipment and tools must be permanently available, except in the case of any tool or equipment that is so infrequently used that its permanent availability is not necessary. Such cases shall be detailed in an exposition procedure.
 - (3) An organisation approved for base maintenance shall have sufficient aircraft access equipment and inspection platforms/docking such that the aircraft can be properly inspected.
- (b) The organisation shall ensure that all tools, equipment and particularly test equipment, as appropriate, are controlled and calibrated according to an officially recognised standard at a frequency to ensure serviceability and accuracy. Records of such calibrations and traceability to the standard used shall be kept by the organisation.

145. A.42 Acceptance of components

- (a) All components shall be classified and appropriately segregated into the following categories:
- (1) Components which are in a satisfactory condition, released on a LYCAA Form 1 or equivalent and marked in accordance with LYCAR.Part-21 Subpart Q.
 - (2) Unserviceable components which shall be maintained in accordance with this section.
 - (3) Unsalvageable components which are classified in accordance with point 145.A.42 (d).
 - (4) Standard parts used on an aircraft, engine, propeller, or other aircraft component when specified in the manufacturer's illustrated parts catalogue and/or the maintenance data.
 - (5) Material both raw and consumable used in the course of maintenance when the organisation is satisfied that the material meets the required specification and has appropriate traceability. All material must be accompanied by documentation clearly relating to the particular material and containing a conformity to specification statement plus both the manufacturing and supplier source.
 - (6) Components referred to in Sub-part K of LYCAR.Part-21.

- (b) Prior to installation of a component, the organisation shall ensure that the particular component is eligible to be fitted when different modification and/or airworthiness directive standards may be applicable.
- (c) The organisation may fabricate a restricted range of parts to be used in the course of undergoing work within its own facilities provided procedures are identified in the exposition.
- (d) Components which have reached their certified life limit or contain a non-repairable defect shall be classified as unsalvageable and shall not be permitted to re-enter the component supply system unless certified life limits have been extended or a repair solution has been done in accordance with data approved by the state responsible of the type design or by LYCAA.

145. A.45 Maintenance data

- (a) The organisation shall hold and use applicable current maintenance data in the performance of maintenance, including modifications and repairs. '**Applicable**' means relevant to any aircraft, component, or process specified in the organisation's approval class rating schedule and in any associated capability list. In the case of maintenance data provided by an operator or customer, the organisation shall hold such data when the work is in progress, with the exception of the need to comply with 145.A.55(c).
- (b) For the purposes of this Part, applicable maintenance data shall be any of the following:
 - (1) Any applicable requirement, procedure, operational directive or information issued by LYCAA responsible for the oversight of the aircraft or component;
 - (2) Any applicable airworthiness directive issued by LYCAA responsible for the oversight of the aircraft or component;
 - (3) Instructions for continuing airworthiness, issued by type certificate holders, supplementary type certificate holders, any other organisation required to publish such data by the state responsible of the type design or by LYCAA and in the case of aircraft or components from third countries the airworthiness data mandated by LYCAA responsible for the oversight of the aircraft or component;
 - (4) Any applicable standard, such as but not limited to, maintenance standard practices recognised by the LYCAA as a good standard for maintenance;
 - (5) Any applicable data issued in accordance with point (d).
- (c) The organisation shall establish procedures to ensure that if found, any inaccurate, incomplete, or ambiguous procedure, practice, information, or maintenance instruction contained in the maintenance data used by maintenance personnel is recorded and notified to the author of the maintenance data.
- (d) The organisation may only modify maintenance instructions in accordance with a procedure specified in the maintenance organisation's exposition. With respect to those changes, the organisation shall demonstrate that they result in equivalent or improved maintenance standards and shall inform the type-certificate holder of such changes. Maintenance instructions for the purposes of this paragraph means instructions on how to carry out the particular maintenance task they exclude the engineering design of repairs and modifications.

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

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

- (f) The organisation shall ensure that all applicable maintenance data is readily available for use when required by maintenance personnel.
- (g) The organisation shall establish a procedure to ensure that maintenance data it controls is kept up to date. In the case of operator/customer controlled and provided maintenance data, the organisation shall be able to show that either it has written confirmation from the operator/customer that all such maintenance data is up to date or it has work orders specifying the amendment status of the maintenance data to be used or it can show that it is on the operator/customer maintenance data amendment list.

145. A.47 Production planning

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

145.A.48 Performance of maintenance

The organisation shall establish procedures to ensure that:

- (a) after completion of maintenance a general verification is carried out to ensure that the aircraft or component is clear of all tools, equipment and any extraneous parts or material, and that all access panels removed have been refitted;
- (b) an error capturing method is implemented after the performance of any critical maintenance task;
- (c) the risk of multiple errors during maintenance and the risk of errors being repeated in identical maintenance tasks are minimised; and,
- (d) damage is assessed and modifications and repairs are carried out using data specified in point M.A.304

145. A.50 Certification of maintenance

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

145. A.55 Maintenance records

- (a) The organisation shall record all details of maintenance work carried out. As a minimum, the organisation shall retain records necessary to prove that all requirements have been met for issuance of the certificate of release to service, including subcontractor's release documents.
- (b) The organisation shall provide a copy of each certificate of release to service to the aircraft operator, together with a copy of any specific repair/modification data used for repairs/modifications carried out.
- (c) The organisation shall retain a copy of all detailed maintenance records and any associated maintenance data for three years from the date the aircraft or component to which the work relates was released from the organisation.
 - (1) The records under this paragraph shall be stored in a manner that ensures protection from damage, alteration, and theft.

- (2) Computer backup discs, tapes etc. shall be stored in a different location from that containing the working discs, tapes etc., in an environment that ensures they remain in good condition.
- (3) Where an organisation approved under this Part terminates its operation, all retained maintenance records covering the last three years shall be distributed to the last owner or customer of the respective aircraft or component or shall be stored as specified by the LYCAA.

145. A.60 Occurrence reporting

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

145. A.65 Safety and quality policy, maintenance procedures and quality system

- (a) The organisation shall establish a safety and quality policy for the organisation to be included in the exposition under 145.A.70.
- (b) The organisation shall establish procedures agreed by LYCAA taking into account human factors and human performance to ensure good maintenance practices and compliance with this Part the procedures under this point shall:
 - (1) ensure that a clear work order or contract has been agreed between the organisation and the organisation requesting maintenance to clearly establish the maintenance to be carried out so that aircraft and components may be released to service in accordance with 145.A.50; and.
 - (2) cover all aspects of carrying out maintenance, including the provision and control of specialised services and lay down the standards to which the organisation intends to work..
- (c) The organisation shall establish a quality system that includes the following:
 - (1) Independent audits in order to monitor compliance with required aircraft/aircraft component standards and adequacy of the procedures to ensure that such procedures invoke good maintenance practices and airworthy aircraft/aircraft components. In the smallest organisations the independent audit Part of the quality system may be contracted to another organisation approved under this Part or a person with appropriate technical knowledge and proven satisfactory audit experience; and

- (2) A quality feedback reporting system to the person or group of persons specified in 145.A.30 (b) and ultimately to the accountable manager that ensures proper and timely corrective action is taken in response to reports resulting from the independent audits established to meet paragraph (1).

145. A.70 Maintenance organisation exposition

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

145. A.75 Privileges of the organisation

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

- (a) Maintain any aircraft and/or component for which it is approved at the locations identified in the approval certificate and in the exposition;
- (b) Arrange for maintenance of any aircraft or component for which it is approved at another organisation that is working under the quality system of the organisation. This refers to work being carried out by an organisation not itself appropriately approved to carry out such maintenance under this Part and is limited to the work scope permitted under procedures laid down in point 145.A.65 (b). This work scope shall not include a base maintenance check of an aircraft or a complete workshop maintenance check or overhaul of an engine or engine module;
- (c) Maintain any aircraft or any component for which it is approved at any location subject to the need for such maintenance arising either from the unserviceability of the aircraft or from the necessity of supporting occasional line maintenance, subject to the conditions specified in the exposition;
- (d) Maintain any aircraft and/or component for which it is approved at a location identified as a line maintenance location capable of supporting minor maintenance and only if the organisation exposition both permits such activity and lists such locations;
- (e) Issue certificates of release to service in respect of completion of maintenance in accordance with 145.A.50.

145. A.80 Limitations on the organisation

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

145. A.85 Changes to the organisation

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

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

145. A.90 Continued validity

- (a) An approval shall be issued for an unlimited duration. It shall remain valid subject to:
 - (1) The organisation remaining in compliance with this Part in accordance with the provisions related to the handling of findings as specified under point 145.A.95; and
 - (2) The LYCAA being granted access to the organisation to determine continued compliance with this Part; and
 - (3) The certificate not being surrendered or revoked.
- (b) Upon surrender or revocation, the approval shall be returned to the LYCAA.

145. A.95 Findings

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

Appendix I
Authorised Release Certificate— LYCAA Form 1

The provisions of Appendix II to LYCAR.Part-M apply

Appendix II
Class and Ratings System used for the Approval of Maintenance
Organisations referred to in (LYCAR.Part-M) Subpart F and LYCAR.Part-
145

The provisions of Appendix IV to LYCAR.Part-M apply.

Appendix III

Maintenance Organisation Approval referred to in LYCAR.Part-145

STATE of libya

**MAINTENANCE ORGANISATION APPROVAL CERTIFICATE**

Approval No.:xxxxxxx

Pursuant to the Civil Aviation Law for the time being into force, and subject to the conditions specified below, the Libyan Civil Aviation Authority hereby certifies

[COMPANY NAME AND ADDRESS]

as a LYCAR Part-145 maintenance organization approved to maintain the products, parts and appliances listed in the attached schedule and issue related certificates of release to service (**CRS**) using the above approval Number.

CONDITIONS

1. This approval is limited to that specified in the scope of work section of the approved maintenance organisation exposition as referred to in Section A of LYCAR.Part-145, and
2. This approval requires compliance with the procedure specified in the approved maintenance exposition, and
3. This approval is valid whilst the approved maintenance organisation remains in compliance with LYCAR.Part-145.
4. Subject to compliance with the foregoing conditions, this approval shall remain valid for an unlimited duration unless the approval has previously been surrendered, superseded, suspended, or revoked.

Date of the original issue: Date of renewal:-
.....

Signed:

For the LYCAA

LYCAA Form 3

(a)

Page 2 of 2

MAINTENANCE ORGANISATION APPROVAL SCHEDULE

Approval No.:.....

Organisation: [COMPANY NAME AND ADDRESS]

CLASS	RATING	LIMITATION	BASE	LINE
AIRCRAFT (**)	(***)	(***)	[YES/NO] (**)	[YES/NO] (**)
	(***)	(***)	[YES/NO] (**)	[YES/NO] (**)
ENGINES (**)	(***)	(***)		
	(***)	(***)		
COMPONENTS OTHER THAN COMPLETE ENGINE OR APUs (**)	(***)	(***)		
	(***)	(***)		
	(***)	(***)		
SPECIALISED SERVICES (**)	(***)	(***)		
	(***)	(***)		

This approval is limited to the products, parts, and appliances and to the activities specified in the scope of work section of the approved maintenance organisation exposition.

Maintenance Organisation Exposition reference:

Date of original issue:Date of renewal

Signed:

For the LYCAA

:
 (**) delete as appropriate if the organisation is not approved
 (***) complete with appropriate rating and limitation

LYCAA Form 3

Appendix IV

Conditions for the use of staff not qualified in accordance with LYCAR.Part-66 referred to in points

145.A.30(j)1 and 2

- (1) Certifying staff in compliance with all the following conditions are deemed to meet the intent of point 145.A.30(j)(1) and (2):
 - (a) The person shall hold a licence or a certifying staff authorisation issued under contracting State national regulations in full compliance with ICAO Annex 1.
 - (b) The scope of work of the person shall not exceed the scope of work defined by the contracting State national licence or the certifying staff authorisation, whatever is the most restrictive.
 - (c) The person shall demonstrate he/she received the training on human factors and aviation legislation referred to in modules 9 and 10 of Appendix I to LYCAR.Part-66.
 - (d) The person shall demonstrate 5 years maintenance experience for line maintenance certifying staff and 8 years for base maintenance certifying staff. However, those persons whose authorised tasks do not exceed those of a LYCAR.Part-66 category A certifying staff, need to demonstrate 3 years maintenance experience only.
 - (e) Line maintenance certifying staff and base maintenance support staff shall demonstrate he/she received type training and passed examination at the category B1, B2 or B3 level, as applicable, referred to in Appendix III to LYCAR.Part-66 for each aircraft type in the scope of work referred to in point (b). Those persons whose scope of work does not exceed those of a category A certifying staff may however receive task training in lieu of a complete type training.
 - (f) Base maintenance certifying staff shall demonstrate he/she received type training and passed examination at the category C level referred to in Appendix III to LYCAR.Part-66 for each aircraft type in the scope of work referred to in point (b), except that for the first aircraft type, training and examination shall be at the category B1, B2 or B3 level of Appendix III.
- (2) Protected rights

- (a) The personnel having privileges before the entry into force of the relevant requirements of LYCAR.Part-66 may continue to exercise them without the need to comply with points 1(c) to 1(f).
- (b) However after that date any certifying staff willing to extend the scope of their authorisation to include additional privileges shall comply with point 1.
- (c) Notwithstanding subparagraph 2(b) above, in the case of additional type training, compliance with points 1(c) and 1(d) is not required.

PART.66 -_CERTIFYING STAFF

SECTION A TECHNICAL REQUIREMENTS

SUBPART A AIRCRAFT MAINTENANCE ENGINEER LICENCE

66. A.1 Scope

This section defines the aircraft maintenance engineer licence and establishes the requirements for application, issue, and continuation of its validity.

66. A.3 Licence categories

- (a) Aircraft maintenance engineer licences include the following categories:
- Category A
 - Category B1
 - Category B2
 - Category B3
 - Category C
- (b) Categories A and B1 are subdivided into subcategories relative to combinations of aeroplanes, helicopters, turbine and piston engines. These 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-pressurised aeroplanes of 2 000 kg MTOM and below.

66. A.5 Aircraft groups

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

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

66. A.10 Application

- (a) An application for an aircraft maintenance engineer licence or change to such licence shall be made on an LYCAA Form 19 (see Appendix V) in a manner established by the LYCAA and submitted thereto.
- (b) An application for the change to an aircraft maintenance engineer licence shall be made to the LYCAA that issued the aircraft maintenance licence.

- (c) In addition to the documents required in points 66.A.10 (a), 66.A.10 (b), and 66.B.105, as appropriate, the applicant for additional basic categories or subcategories to an aircraft maintenance engineer licence shall submit his/her current original aircraft maintenance engineer licence to the LYCAA together with the LYCAA Form 19.
- (d) Reserved.
- (e) Reserved.
- (f) Each application shall be supported by documentation to demonstrate compliance with the applicable theoretical knowledge, practical training, and experience requirements at the time of application.

66. A.15 Eligibility

An applicant for an Aircraft Maintenance Engineer Licence (AMEL) shall be at least **21 years of age**, has obtained a certificate of education in scientific and technical subjects which qualifies her/him for university or higher technology institutes entry; and should meet **ONE** of the following criteria to apply for an Aircraft Maintenance Engineer Licence :-

1. a Libyan national; or
2. a legal employee of Libyan approved organisation with proper justification for a need to hold a LYCAA aircraft maintenance engineer licence; or
3. a graduate of LYCAR.Part-147 approved basic aircraft maintenance-training organisation.

66. A.20 Privileges

- (a) The following privileges shall apply:
 - (1) A category (A) aircraft maintenance engineer licence (AMEL) permits the holder to issue certificates of release to service (CRS) following minor scheduled line maintenance and simple defect rectification within the limits of tasks specifically endorsed on the certification authorisation referred to in point 145.A.35 of LYCAR.Part-145. The certification privileges shall be restricted to work that the licence holder has personally performed in the maintenance organisation that issued the certification authorisation.
 - (2) A category B1 aircraft maintenance engineer licence shall permit the holder to issue certificates of release to service and to act as B1 support staff following:
 - Maintenance performed on aircraft structure, powerplant and mechanical and electrical systems,
 - Work on avionic systems requiring only simple tests to prove their serviceability and not requiring troubleshooting.Category B1 includes the corresponding A subcategory.
 - (3) A category B2 aircraft maintenance engineer licence shall permit the holder:
 - (i) To issue certificates of release to service and to act as B2 support staff for following:
 - maintenance performed on avionic and electrical systems, and
 - electrical and avionics tasks within power-plant and mechanical systems, requiring only simple tests to prove their serviceability; and
 - (ii) To issue certificates of release to service following minor scheduled line maintenance and simple defect rectification within the limits of tasks specifically endorsed on the certification authorisation referred to in point 145.A.35 of LYCAR.Part-145. This certification privilege shall be restricted to work that the licence holder has personally performed in the maintenance organisation, which issued the certification authorisation and limited to the ratings already endorsed in the B2 licence.

The category B2 licence does not include any (A) subcategory.

- (4) A category B3 aircraft maintenance engineer licence shall permit the holder to issue certificates of release to service and to act as B3 support staff for:
 - Maintenance performed on aeroplane structure, powerplant and mechanical and electrical systems,
 - Work on avionic systems requiring only simple tests to prove their serviceability and not requiring troubleshooting.
 - (5) A Category C aircraft maintenance engineer licence shall permit the holder to issue certificates of release to service following base maintenance on aircraft. The privileges apply to the aircraft in its entirety.
- (b) The holder of an aircraft maintenance engineer licence may not exercise its privileges unless:
- (1) In compliance with the applicable requirements of LYCAR.Part-M and LYCAR.Part-145; and
 - (2) In the preceding 2-year period he/she has, either had 6 months of maintenance experience in accordance with the privileges granted by the aircraft maintenance engineer licence or, met the provision for the issue of the appropriate privileges; and
 - (3) He/she has the adequate competence to certify maintenance on the corresponding aircraft; and
 - (4) He/she is able to read, write, and communicate to an understandable level in the language(s) in which the technical documentation and procedures necessary to support the issue of the certificate of release to service are written.

66. A.25 Basic knowledge requirements

- (a) An applicant for an aircraft maintenance engineer licence, or the addition of a category or subcategory to such a licence, shall satisfactorily completed an aircraft maintenance-engineering basic training course with a level of knowledge in the appropriate subject modules in accordance with the Appendix I of this part. The basic knowledge training courses and examinations shall be conducted by a training organisation appropriately approved under LYCAR.Part-147; or accepted by LYCAA.

66. A.30 Basic experience requirements

- (a) An applicant for an aircraft maintenance engineer licence shall have acquired:
- (1) For category A, subcategories B1.2 and B1.4 and category B3:
 - (i) 2 years of practical maintenance experience on operating aircraft;
 - (2) For category B2 and subcategories B1.1 and B1.3:
 - (i) 3 years of practical maintenance experience on operating aircraft;
 - (3) For category C with respect to large aircraft:
 - (i) 6 years of experience exercising category B1.1, B1.3 or B2 privileges on large aircraft or as support staff according to point 145.A.35, or, a combination of both; or
 - (ii) 10 years of experience exercising category B1.2 or B1.4 privileges on large aircraft or as support staff according to point 145.A.35, or a combination of both;
 - (4) For category C with respect to other than large aircraft: 7 years of experience exercising category B1 or B2 privileges on other than large aircraft or as support staff according to point 145.A.35(a), or a combination of both;

- (5) for category C obtained through the academic route: an applicant holding an academic degree in a technical discipline, from a university or other higher educational institution recognised by the LYCAA, seven years of experience working in a civil aircraft maintenance environment on a representative selection of tasks directly associated with aircraft maintenance including 24 months of observation of base maintenance tasks.
- (b) An applicant for an extension to an aircraft maintenance engineer licence shall have a minimum civil aircraft maintenance experience requirement appropriate to the additional category or subcategory of licence applied for as defined in Appendix IV to this Part.
- (c) The experience shall be practical and involve a representative cross section of maintenance tasks on aircraft.
- (d) At least 1 year of the required experience shall be recent maintenance experience on aircraft of the category/subcategory for which the initial aircraft maintenance engineer licence is sought. For subsequent category/subcategory additions to an existing aircraft maintenance engineer licence, the additional recent maintenance experience required may be less than 1 year, but shall be at least 3 months. The required experience shall be dependent upon the difference between the licence category/subcategory held and applied for. Such additional experience shall be typical of the new licence category/ subcategory sought.
- (e) Reserved.
- (f) Experience shall have been acquired within the 10 years preceding the application for an aircraft maintenance engineer licence or the addition of a category or subcategory to such a licence.

66. A.40 Continued validity of the aircraft maintenance engineer licence

- (a) The aircraft maintenance engineer licence becomes invalid 5 years after its last issue or change, unless the holder submits his/her aircraft maintenance licence to the LYCAA, in order to verify that the information contained in the licence is the same as that contained in the LYCAA records, pursuant to point 66.B.120.
- (b) The holder of an aircraft maintenance engineer licence shall complete the relevant parts of LYCAA Form 19 (Appendix V) and submit it with the holder's copy of the licence to the LYCAA. Unless the holder works in a maintenance organisation approved in accordance with LYCAR.Part-145 that has a procedure in its exposition whereby such organisation may submit the necessary documentation on behalf of the aircraft maintenance engineer licence holder.
- (c) Any certification privilege based upon an aircraft maintenance engineer licence becomes invalid as soon as the aircraft maintenance engineer licence is invalid.
- (d) The aircraft maintenance engineer licence is only valid (i) When issued and/or changed by the LYCAA, and (ii) When the holder has signed the document.

66. A.45 Endorsement with aircraft ratings

- (a) In order to be entitled to exercise certification privileges on a specific aircraft type, the holder of an aircraft maintenance engineer licence need to have his/her licence endorsed with the relevant aircraft ratings.
 - For category B1, B2 or C the relevant aircraft ratings are the following:
 - (1) For group 1 aircraft, the appropriate aircraft type rating.
 - (2) For group 2 aircraft, the appropriate aircraft type rating, manufacturer sub-group rating or full sub-group rating.
 - (3) For group 3 aircraft, the appropriate aircraft type rating or full group rating.
 - For category B3, the relevant rating is 'piston-engine non-pressurised aeroplanes of 2 000 kg MTOM and below'.

- For category A, no rating is required, subject to compliance with the requirements of point 145.A.35 of LYCAR.Part-145.
- (b) The endorsement of aircraft type ratings requires the satisfactory completion of the relevant category B1; B2 or C aircraft type training.
- (c) In addition to the requirement of point (b), the endorsement of the first aircraft type rating within a given category/sub-category requires satisfactory completion of the corresponding On the Job Training, as described in Appendix III to this Part.
- (d) By derogation from points (b) and (c), for group 2 and 3 aircraft, aircraft type ratings may also be granted after:
 - Satisfactory completion of the relevant category B1, B2 or C aircraft type examination described in Appendix III to this Part, and
 - In the case of B1 and B2 category, demonstration of practical experience on the aircraft type. In that case, the practical experience shall include a representative cross section of maintenance activities relevant to the licence category.
- (e) For group 2 aircraft:
 - (1) The endorsement of manufacturer sub-group ratings for category B1 and C licence holders requires complying with the aircraft type rating requirements of at least two aircraft types from the same manufacturer which combined are representative of the applicable manufacturer sub-group;
 - (2) The endorsement of full sub-group ratings for category B1 and C licence holders requires complying with the aircraft type rating requirements of at least three aircraft types from different manufacturers which combined are representative of the applicable sub-group;
 - (3) The endorsement of manufacturer sub-groups and full sub-group ratings for category B2 licence holders requires demonstration of practical experience, which shall include a representative cross section of maintenance activities relevant to the licence category and to the applicable aircraft sub-group.
- (f) For group 3 aircraft:
 - (1) The endorsement of the full group 3 rating for category B1, B2, and C licence holders requires demonstration of practical experience, which shall include a representative cross section of maintenance activities relevant to the licence category and to the group 3.
 - (2) For category B1, unless the applicant provides evidence of appropriate experience, the group 3 rating shall be subject to the following limitations, which shall be endorsed on the licence:
 - Pressurised aeroplanes
 - Metal structure aeroplanes
 - Composite structure aeroplanes
 - Wooden structure aeroplanes
 - Aeroplanes with metal tubing structure covered with fabric.
- (g) For the B3 licence:
 - (1) The endorsement of the rating 'piston-engine non-pressurised aeroplanes of 2000 kg MTOM and below' requires demonstration of practical experience which shall include a representative cross-section of maintenance activities relevant to the licence category.
 - (2) Unless the applicant provides evidence of appropriate experience, the rating referred to in point 1 shall be subject to the following limitations, which shall be endorsed on the licence:
 - Wooden structure aeroplanes
 - Aeroplanes with metal tubing structure covered with fabric
 - Metal structure aeroplanes

- Composite structure aeroplanes.

66. A.50 Limitations

- (a) Limitations introduced on an aircraft maintenance engineer licence are exclusions from the certification privileges and affect the aircraft in its entirety.
- (b) For limitations referred to in point 66.A.45, limitations shall be removed upon:
 - (1) Demonstration of appropriate experience; or
 - (2) After a satisfactory practical assessment performed by LYCAA or an authorized person from LYCAA.
- (c) For limitations referred to in point 66.A.70, limitations shall be removed upon satisfactory completion of examination on those modules/subjects defined in the applicable conversion report referred to in point 66.B.300.

66. A.55 Evidence of qualification

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

66. A.70 Conversion provisions

- (a) The holder of a valid certifying staff qualification, prior to the date of entry into force of this Part shall be issued an aircraft maintenance engineer licence by the LYCAA without further examination subject to the conditions specified in Section B Subpart D.
- (b) A person undergoing a valid certifying staff qualification, prior to the date of entry into force of this Part may continue to be qualified. The holder of a certifying staff qualification gained following such process shall be issued an aircraft maintenance licence by the LYCAA without further examination subject to the conditions specified in Section B Subpart D.
- (c) Where necessary, the aircraft maintenance engineer licence shall contain limitations in accordance with point 66.A.50 to reflect the differences between (i) the scope of the certifying staff qualification valid before the entry into force of this Part and (ii) the basic knowledge requirements and the basic examination standards laid down in Appendix I and II to this Part.
- (d) By derogation to point (c) for aircraft not involved in commercial air transport other than large aircraft, the aircraft maintenance engineer licence shall contain limitations in accordance with point 66.A.50 to ensure that the certifying staff privileges valid before the entry into force of this Part and the privileges of the converted LYCAR.Part-66 aircraft maintenance engineer licence remain the same.

Appendix I

Basic Knowledge Requirements

(1) Knowledge levels for Category A, B1, B2, B3 and C Aircraft Maintenance Engineer Licence

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

The knowledge level indicators are defined on 3 levels as follows:

- LEVEL 1: A familiarisation with the principal elements of the subject.

Objectives:

- (a) The applicant should be familiar with the basic elements of the subject.
 - (b) The applicant should be able to give a simple description of the whole subject, using common words and examples.
 - (c) The applicant should be able to use typical terms.
- LEVEL 2: A general knowledge of the theoretical and practical aspects of the subject and an ability to apply that knowledge.

Objectives:

- (a) The applicant should be able to understand the theoretical fundamentals of the subject.
 - (b) The applicant should be able to give a general description of the subject using, as appropriate, typical examples.
 - (c) The applicant should be able to use mathematical formulae in conjunction with physical laws describing the subject.
 - (d) The applicant should be able to read and understand sketches, drawings and schematics describing the subject.
 - (e) The applicant should be able to apply his knowledge in a practical manner using detailed procedures.
- LEVEL 3: A detailed knowledge of the theoretical and practical aspects of the subject and a capacity to combine and apply the separate elements of knowledge in a logical and comprehensive manner.

Objectives:

- (a) The applicant should know the theory of the subject and interrelationships with other subjects.
- (b) The applicant should be able to give a detailed description of the subject using theoretical fundamentals and specific examples.
- (c) The applicant should understand and be able to use mathematical formulae related to the subject.
- (d) The applicant should be able to read, understand and prepare sketches, simple drawings and schematics describing the subject. 2.
- (e) The applicant should be able to apply his knowledge in a practical manner using manufacturer's instructions.
- (f) The applicant should be able to interpret results from various sources and measurements and apply corrective action where appropriate.

(2) MODULARISATION

Qualification on basic subjects for each aircraft maintenance engineer licence category or subcategory should be in accordance with the following matrix, where applicable subjects are indicated by an 'X':

Subject modules	A or B1 aeroplane with:		A or B1 helicopter with:		B2
	Turbine engine(s)	Piston engine(s)	Turbine engine(s)	Piston engine(s)	Avionics
1	x	x	x	x	x
2	x	x	x	x	x
3	x	x	x	x	x
4	x	x	x	x	x
5	x	x	x	x	x
6	x	x	x	x	x
7	x	x	x	x	x
8	x	x	x	x	x
9	x	x	x	x	x
10	x	x	x	x	x
11	x	x			
12			x	x	
13					x
14					x
15	x		x		
16		x		x	
17	x	x			

MODULE 1. MATHEMATICS					
	Level				
	A	B1	B2	B3	
1.1 Arithmetic 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	2	2	
1.2 Algebra (a) Evaluating simple algebraic expressions, addition, subtraction, multiplication and division, use of brackets, simple algebraic fractions; (b) 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 -	2 1	2 1	2 1	
1.3 Geometry (a) Simple geometrical constructions; (b) Graphical representation; nature and uses of graphs, graphs of equations/functions; (c) Simple trigonometry; trigonometrical relationships, use of tables and rectangular and polar coordinates.	- 2 -	1 2 2	1 2 2	1 2 2	
MODULE 2. PHYSICS					
2.1 Matter Nature of matter: the chemical elements, structure of atoms, molecules; Chemical compounds. States: solid, liquid and gaseous; Changes between states.	1	1	1	1	
2.2 Mechanics 2.2.1 Statics 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).	1	2	1	1	
2.2.2 Kinetics 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.	1	2	1	1	
2.2.3 Dynamics					

(a) Mass Force, inertia, work, power, energy (potential, kinetic and total energy), heat, efficiency;	1	2	1	1	
(b) Momentum, conservation of momentum; Impulse; Gyroscopic principles; Friction: nature and effects, coefficient of friction (rolling resistance).	1	2	2	1	
2.2.4 Fluid dynamics					
(a) Specific gravity and density;	2	2	2	2	
(b) Viscosity, fluid resistance, effects of streamlining; effects of compressibility on fluids; Static, dynamic and total pressure: Bernoulli's Theorem, venturi.	1	2	1	1	
2.3 Thermodynamics	2	2	2	2	
(a) Temperature: thermometers and temperature scales: Celsius, Fahrenheit and Kelvin; Heat definition.					
(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)	-	2	2	-	
Nature of light; speed of light; Laws of reflection and refraction: reflection at plane surfaces, reflection by spherical mirrors, refraction, lenses; Fibre optics.					
2.5 Wave Motion and Sound	-	2	2	-	
Wave motion: mechanical waves, sinusoidal wave motion, interference phenomena, standing waves; Sound: speed of sound, production of sound, intensity, pitch and quality, Doppler effect.					
MODULE 3. ELECTRICAL FUNDAMENTALS					
3.1 Electron Theory	1	1	1		
Structure and distribution of electrical charges within: atoms, molecules, ions, compounds; Molecular structure of conductors, semiconductors and insulators.					
3.2 Static Electricity and Conduction	1	2	2		
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		
3.4 Generation of Electricity Production of electricity by the following methods: light, heat, friction, pressure, chemical action, magnetism and motion.	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		
3.6 DC Circuits Ohms Law, Kirchoff's Voltage and Current Laws; Calculations using above laws to find resistance, voltage and current; Significance of the internal resistance of a supply.	-	2	2		
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 using and series parallel combinations; Operation and use of potentiometers and rheostats; Operation of Wheatstone Bridge.	-	2	2		

(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; Construction of Wheatstone Bridge;	-	1	1		
3.8 Power Power, work and energy (kinetic and potential); Dissipation of power by a resistor; Power formula; Calculations involving power, work and energy.	-	2	2		
3.9 Capacitance/Capacitor 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.	-	2	2		
3.10 Magnetism (a) 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.	-	2	2		
(b) 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.	-	2	2		

<p>3.11 Inductance/Inductor 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;</p>	-	2	2		
<p>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.</p>	-	2	2		
<p>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.</p>	1	2	2		
<p>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.</p>	-	2	2		
<p>3.15 Transformers Transformer construction principles and operation;</p>	-	2	2		

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		
3.18 AC Motors Construction, principles of operation and characteristics of: AC synchronous and induction motors both single and polyphase; Methods of producing a rotating field: capacitor, inductor, shaded or split pole. Methods of speed control and direction of rotation;	-	2	2		
MODULE 4. ELECTRONIC FUNDAMENTALS					
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,	-	-	2	-	

Schottky diode, photo conductive diode, varactor diode, varistor, rectifier diodes, Zener diode.					
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 Description and use of printed circuit boards.	-	1	2	-	
4.3 Servomechanisms (a) 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;	-	1	-	-	
(b) 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	-	-	2	-	
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 Numbering systems: binary, octal and hexadecimal; Demonstration of conversions between the decimal and binary, octal and hexadecimal systems and vice versa.	-	1	-	2	-
5.3 Data Conversion Analogue Data, Digital Data; Operation and application of analogue to digital, and digital to analogue converters, inputs and outputs, limitations of various types.	-	1	-	2	-
5.4 Data Buses Operation of data buses in aircraft systems, including knowledge of ARINC and other specifications. Aircraft Network/Ethernet.	-	2	-	2	-
5.5 Logic Circuits (a) Identification of common logic gate symbols, tables and equivalent circuits; Applications used for aircraft systems, schematic diagrams. (b) Interpretation of logic diagrams.	- -	2 -	- -	2 2	1 -
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	-	1	1	2	-

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; 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: (a) 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; (b) 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 Integrated Modular Avionics Cabin Systems Information Systems.	-	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	1 1	2 1	

(b) Testing of ferrous materials for hardness, tensile strength, fatigue strength and impact resistance.					
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	1	2	2	2	
(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	
(b) The detection of defects/deterioration in composite and non-metallic material; Repair of composite and non-metallic material					
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) Chemical fundamentals; Formation by, galvanic action process, microbiological, stress;	1	1	1	1	
(b) Types of corrosion and their identification; Causes of corrosion; Material types, susceptibility to corrosion.	2	3	2	2	
6.5 Fasteners	2	2	2	2	
6.5.1 Screw threads					
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 Tab and spring washers, locking plates, split pins, pal-nuts, wire locking, quick release fasteners, keys, circlips, cotter pins.	2	2	2	2	
6.5.4 Aircraft rivets Types of solid and blind rivets: specifications and identification, heat treatment.	1	2	1	2	
6.6 Pipes and Unions (a) Identification of, and types of rigid and flexible pipes and their connectors used in aircraft; (b) Standard unions for aircraft hydraulic, fuel, oil, pneumatic and air system pipes.	2 2	2 2	2 1	2 2	
6.7 Springs Types of springs, materials, characteristics and applications.	-	2	1	1	
6.8 Bearings Purpose of bearings, loads, material, construction; Types of bearings and their application.	1	2	2	1	
6.9 Transmissions 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.	1	2	2	1	
6.10 Control Cables Types of cables; End fittings, turnbuckles and compensation devices; Pulleys and cable system components; Bowden cables; Aircraft flexible control systems.	1	2	1	2	
6.11 Electrical Cables and Connectors 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.	1	2	2	2	
6.6 Pipes and Unions (a) Identification of, and types of rigid and flexible pipes and their connectors used in aircraft; (b) Standard unions for aircraft hydraulic, fuel, oil, pneumatic and air system pipes	2 2	2 2	2 1	2 2	

6.7 Springs Types of springs, materials, characteristics and applications.	-	2	1	1	
6.8 Bearings Purpose of bearings, loads, material, construction; Types of bearings and their application.	1	2	2	1	
6.9 Transmissions 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.	1	2	2	1	
6.10 Control Cables Types of cables; End fittings, turnbuckles and compensation devices; Pulleys and cable system components; Bowden cables; Aircraft flexible control systems.	1	2	1	2	
6.11 Electrical Cables and Connectors 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.	1	2	2	2	
<p>MODULE 7A. MAINTENANCE PRACTICES</p> <p><i>Note:</i> This module does not apply to category B3. Relevant subject matters for category B3 are defined in module 7B.</p>					
	LEVEL				
	A	B1	B2		
7.1 Safety Precautions-Aircraft and Workshop 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.	3	3	3		
7.2 Workshop Practices Care of tools, control of tools, use of workshop materials; Dimensions, allowances and tolerances, standards of workmanship; Calibration of tools and equipment, calibration standards.	3	3	3		

7.3 Tools 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.	3	3	3		
7.4 Avionic General Test Equipment Operation, function and use of avionic general test equipment.	-	2	3		
7.5 Engineering Drawings, Diagrams and Standards 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.	1	2	2		
7.6 Fits and Clearances 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.	1	2	1		
7.7 Electrical Wiring Interconnection System (EWIS) 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; Identification of wire types, their inspection criteria and damage tolerance. Wiring protection techniques: Cable looming and loom support, cable clamps, protective sleeving techniques including heat shrink wrapping, shielding; EWIS installations, inspection, repair, maintenance and cleanliness standards.	1	3	3		
7.8 Riveting Riveted joints, rivet spacing and pitch; Tools used for riveting and dimpling; Inspection of riveted joints.	1	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	-		
7.10 Springs Inspection and testing of springs.	1	2	-		
7.11 Bearings Testing, cleaning and inspection of bearings; Lubrication requirements of bearings; Defects in bearings and their causes	1	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	-		
7.13 Control Cables Swaging of end fittings; Inspection and testing of control cables; Bowden cables; aircraft flexible control systems	1	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	-		
7.14.2 Composite and non-metallic Bonding practices; Environmental conditions; Inspection methods.	-	2	-		
7.15 Welding, Brazing, Soldering and Bonding (a) Soldering methods; inspection of soldered joints (b) Welding and brazing methods; Inspection of welded and brazed joints; Bonding methods and inspection of bonded joints.	- -	2 2	2 -		
7.16 Aircraft Weight and Balance (a) Centre of Gravity/Balance limits calculation: use of relevant documents; (b) Preparation of aircraft for weighing; Aircraft weighing.	- -	2 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;	2	2	2		

Refuelling/defuelling procedures; De-icing/anti-icing procedures; Electrical, hydraulic and pneumatic ground supplies. Effects of environmental conditions on aircraft handling and operation.					
7.18 Disassembly, Inspection, Repair and Assembly Techniques (a) Types of defects and visual inspection techniques; Corrosion removal, assessment and re-protection;	2	3	3		
(b) General repair methods, Structural Repair Manual; Ageing, fatigue and corrosion control programmes;	-	2	-		
(c) Non-destructive inspection techniques including, penetrant, radiographic, eddy current, ultrasonic and boroscope methods;	-	2	1		
(d) Disassembly and re-assembly techniques	2	2	2		
(e) Trouble shooting techniques	-	2	2		
7.19 Abnormal Events (a) Inspections following lightning strikes and HIRF penetration; (b) Inspections following abnormal events such as heavy landings and flight through turbulence.	2 2	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		
MODULE 7B. MAINTENANCE PRACTICES					
<i>Note: The scope of this module shall reflect the technology of aeroplanes relevant to the B3 category.</i>					
	LEVEL B3				
7.1 Safety Precautions-Aircraft and Workshop 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.	3				
7.2 Workshop Practices	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 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.	3				
7.4 Avionic General Test Equipment Operation, function and use of avionic general test equipment.	-				
7.5 Engineering Drawings, Diagrams and Standards 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.	2				
7.6 Fits and Clearances 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.	2				
7.7 Electrical Cables and Connectors 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.	2				
7.8 Riveting Riveted joints, rivet spacing and pitch; Tools used for riveting and dimpling;	2				

Inspection of riveted joints.					
7.9 Pipes and Hoses Bending and belling/flaring aircraft pipes; Inspection and testing of aircraft pipes and hoses; Installation and clamping of pipes	2				
7.10 Springs Inspection and testing of springs.	1				
7.11 Bearings Testing, cleaning and inspection of bearings; Lubrication requirements of bearings; Defects in bearings and their causes.	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.	2				
7.13 Control Cables Swaging of end fittings; Inspection and testing of control cables; Bowden cables; aircraft flexible control systems.	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. 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; (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; (b) Preparation of aircraft for weighing; Aircraft weighing.	2 2				
7.17 Aircraft Handling and Storage Aircraft taxiing/towing and associated safety precautions;	2				

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.					
7.18 Disassembly, Inspection, Repair and Assembly Techniques (a) Types of defects and visual inspection techniques; Corrosion removal, assessment and re-protection; (b) General repair methods, Structural Repair Manual; Ageing, fatigue and corrosion control programmes; (c) Non-destructive inspection techniques including, penetrant, radiographic, eddy current, ultrasonic and boroscope methods; (d) Disassembly and re-assembly techniques; (e) Trouble shooting techniques.	3 2 2 2 2				
7.19 Abnormal Events (a) Inspections following lightning strikes and HIRF penetration. (b) Inspections following abnormal events such as heavy landings and flight through turbulence.	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.	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 Airflow around a body; Boundary layer, laminar and turbulent flow, free stream flow, relative airflow, upwash and downwash, vortices, stagnation;	1	2	2	1	

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 9A. HUMAN FACTORS					
<i>Note: This module does not apply to category B3. Relevant subject matters for category B3 are defined in module 9B.</i>					
	LEVEL				
	A	B1	B2		
9.1 General The need to take human factors into account; Incidents attributable to human factors/human error; 'Murphy's' law.	1	2	2		
9.2 Human Performance and Limitations Vision; Hearing; Information processing; Attention and perception; Memory; Claustrophobia and physical access.	1	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		
9.4 Factors Affecting Performance Fitness/health;	2	2	2		

Stress: domestic and work related; Time pressure and deadlines; Workload: overload and underload; Sleep and fatigue, shiftwork; Alcohol, medication, drug abuse.					
9.5 Physical Environment Noise and fumes; Illumination; Climate and temperature; Motion and vibration; Working environment.	1	1	1		
9.6 Tasks Physical work; Repetitive tasks; Visual inspection; Complex systems	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		
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		
9.9 Hazards in the Workplace Recognising and avoiding hazards; Dealing with emergencies.	1	2	2		
MODULE 9B. HUMAN FACTORS					
<i>Note: The scope of this module shall reflect the less demanding environment of maintenance for B3 licence holders.</i>					
	LEVEL B3				
9.1 General The need to take human factors into account; Incidents attributable to human factors/human error; 'Murphy's' law.	2				
9.2 Human Performance and Limitations Vision; Hearing; Information processing; Attention and perception;	2				

Memory; Claustrophobia and physical access.					
9.3 Social Psychology Responsibility: individual and group; Motivation and de-motivation; Peer pressure; 'Culture' issues; Team working; Management, supervision and leadership.	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				
9.5 Physical Environment Noise and fumes; Illumination; Climate and temperature; Motion and vibration; Working environment.	1				
9.6 Tasks Physical work; Repetitive tasks; Visual inspection; Complex systems.	1				
9.7 Communication Within and between teams; Work logging and recording; Keeping up to date, currency; Dissemination of information.	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.	2				
9.9 Hazards in the Workplace Recognising and avoiding hazards; Dealing with emergencies.	2				
MODULE 10. AVIATION LEGISLATION					
	LEVEL				

	A	B1	B2	B3	
10.1 Regulatory Framework Role of the International Civil Aviation Organisation; Role of LYCAA; Libyan Civil Aviation Law. Relationship between the various LYCAR such as LYCAR-M, LYCAR-145, LYCAR-66, LYCAR-147 and LYCAR.OPS.	1	1	1	1	
10.2 Certifying Staff — Maintenance Detailed understanding of LYCAR.66.	2	2	2	2	
10.3 Approved Maintenance Organisations Detailed understanding of LYCAR.145 and LYCAR.M Subpart F.	2	2	2	2	
10.4 Air operations General understanding of OPS. Air Operators Certificates; Operator's responsibilities, in particular regarding continuing airworthiness and maintenance; Aircraft Maintenance Programme; MEL//CDL; Documents to be carried on board; Aircraft placarding (markings).	1	1	1	1	
10.5 Certification of aircraft, parts and appliances (a) General General understanding of TYPE DESIGN certification specifications CS-23, 25, 27, 29.	-	1	1	1	
(b) Documents Certificate of Airworthiness; restricted certificates of airworthiness and permit to fly; Certificate of Registration; Noise Certificate; Weight Schedule; Radio Station Licence and Approval.	-	2	2	2	
10.6 Continuing airworthiness Detailed understanding of LYCAR.Part-21 provisions related to continuing airworthiness. Detailed understanding of CARM.	2	2	2	2	
10.7 Applicable National and International Requirements for (a) Maintenance Programmes, Maintenance checks and inspections; Airworthiness Directives; Service Bulletins, manufacturers service information; Modifications and repairs; Maintenance documentation: maintenance manuals, structural repair manual, illustrated parts catalogue, etc.;	1	2	2	2	

Only for A to B2 licences: Master Minimum Equipment Lists, Minimum Equipment List, Dispatch Deviation Lists;					
(b) Continuing airworthiness; Minimum equipment requirements — Test flights; Only for B1 and B2 licences: ETOPS, EDTO, maintenance and dispatch requirements; All Weather Operations, Category 2/3 operations.	-	1	1	1	
MODULE 11A. TURBINE AEROPLANE AERODYNAMICS, STRUCTURES AND SYSTEMS					
	LEVEL				
	A1	B1.1			
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 antibalance (leading) tabs, servo tabs, spring tabs, mass balance, control surface bias, aerodynamic balance panels.	1	2			
11.1.2. High Speed Flight Speed of sound, subsonic flight, transonic flight, supersonic flight; Mach number, critical Mach number, compressibility buffet, shock wave, aerodynamic heating, area rule; Factors affecting airflow in engine intakes of high speed aircraft; Effects of sweepback on critical Mach number.	1	2			
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			
(b) Construction methods of: stressed skin fuselage, formers, stringers, longerons, bulkheads, frames, doublers, struts, ties, beams, floor structures,	1	2			

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.					
11.3 Airframe Structures — Aeroplanes 11.3.1 Fuselage (ATA 52/53/56) Construction and pressurisation sealing; Wing, stabiliser, pylon and undercarriage attachments; Seat installation and cargo loading system; Doors and emergency exits: construction, mechanisms, operation and safety devices; Windows and windscreen construction and mechanisms.	1	2			
11.3.2 Wings (ATA 57) Construction; Fuel storage; Landing gear, pylon, control surface and high lift/drag attachments.	1	2			
11.3.3 Stabilisers (ATA 55) Construction; Control surface attachment.	1	2			
11.3.4 Flight Control Surfaces (ATA 55/57) Construction and attachment; Balancing — mass and aerodynamic.	1	2			
11.3.5 Nacelles/Pylons (ATA 54) Nacelles/Pylons: — Construction, — Firewalls, — Engine mounts	1	2			
11.4 Air Conditioning and Cabin Pressurisation (ATA 21) 11.4.1 Air supply Sources of air supply including engine bleed, APU and ground cart. 11.4.2 Air Conditioning Air conditioning systems; Air cycle and vapour cycle machines; Distribution systems; Flow, temperature and humidity control system. 11.4.3 Pressurisation Pressurisation systems; Control and indication including control and safety valves; Cabin pressure controllers. 11.4.4 Safety and warning devices	1 1 1 1	2 3 3 3			

Protection and warning devices.					
11.5 Instruments/Avionic Systems 11.5.1 Instrument Systems (ATA 31) 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; Glass cockpit; Other aircraft system indication.	1	2			
11.5.2 Avionic Systems Fundamentals of system lay-outs and operation of: Auto Flight (ATA 22), Communications (ATA 23), Navigation Systems (ATA 34).	1	1			
11.6 Electrical Power (ATA 24) Batteries Installation and Operation; DC power generation; AC power generation; Emergency power generation; Voltage regulation; Power distribution; Inverters, transformers, rectifiers; Circuit protection; External/Ground power.	1	3			
11.7 Equipment and Furnishings (ATA 25) (a) Emergency equipment requirements; Seats, harnesses and belts. (b) Cabin lay-out; Equipment lay-out; Cabin Furnishing installation; Cabin entertainment equipment; Galley installation; Cargo handling and retention equipment; Airstairs.	2 1	2 1			
11.8 Fire Protection (ATA 26) (a) Fire and smoke detection and warning systems; Fire extinguishing systems; System tests; (b) Portable fire extinguisher	1 1	3 1			
11.9 Flight Controls (ATA 27) Primary controls: aileron, elevator, rudder, spoiler; Trim control; Active load control; High lift devices; Lift dump, speed brakes;	1	3			

System operation: manual, hydraulic, pneumatic, electrical, fly-by-wire; Artificial feel, Yaw damper, Mach trim, rudder limiter, gust lock systems; Balancing and rigging; Stall protection/warning system.					
11.10 Fuel Systems (ATA 28) System lay-out; Fuel tanks; Supply systems; Dumping, venting and draining; Cross-feed and transfer; Indications and warnings; Refuelling and defuelling; Longitudinal balance fuel systems.	1	3			
11.11 Hydraulic Power (ATA 29) System lay-out; Hydraulic fluids; Hydraulic reservoirs and accumulators; Pressure generation: electric, mechanical, pneumatic; Emergency pressure generation; Filters; Pressure Control; Power distribution; Indication and warning systems; Interface with other systems.	1	3			
11.12 Ice and Rain Protection (ATA 30) Ice formation, classification and detection; Anti-icing systems: electrical, hot air and chemical; De-icing systems: electrical, hot air, pneumatic and chemical; Rain repellent; Probe and drain heating; Wiper systems.	1	3			
11.13 Landing Gear (ATA 32) Construction, shock absorbing; Extension and retraction systems: normal and emergency; Indications and warning; Wheels, brakes, antiskid and autobraking; Tyres; Steering; Air-ground sensing	2	3			
11.14 Lights (ATA 33)	2	3			

External: navigation, anti collision, landing, taxiing, ice; Internal: cabin, cockpit, cargo; Emergency.					
11.15 Oxygen (ATA 35) System lay-out: cockpit, cabin; Sources, storage, charging and distribution; Supply regulation; Indications and warnings	1	3			
11.16 Pneumatic/Vacuum (ATA 36) System lay-out; Sources: engine/APU, compressors, reservoirs, ground supply; Pressure control; Distribution; Indications and warnings; Interfaces with other systems.	1	3			
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			
11.18 On Board Maintenance Systems (ATA 45) Central maintenance computers; Data loading system; Electronic library system; Printing; Structure monitoring (damage tolerance monitoring).	1	2			
11.19 Integrated Modular Avionics (ATA42) Functions that may be typically integrated in the Integrated Modular Avionic (IMA) modules are, among others: Bleed Management, Air Pressure Control, Air Ventilation and Control, Avionics and Cockpit Ventilation Control, Temperature Control, Air Traffic Communication, Avionics Communication Router, Electrical Load Management, Circuit Breaker Monitoring, Electrical System BITE, Fuel Management, Braking Control, Steering Control, Landing Gear Extension and Retraction, Tyre Pressure Indication, Oleo Pressure Indication, Brake Temperature Monitoring, etc. Core System; Network Components.	1	2			
11.20 Cabin Systems (ATA44) The units and components which furnish a means of entertaining the passengers and providing communication within the aircraft (Cabin Intercommunication Data System) and between the	1	2			

<p>aircraft cabin and ground stations (Cabin Network Service). Includes voice, data, music and video transmissions.</p> <p>The Cabin Intercommunication Data System provides an interface between cockpit/cabin crew and cabin systems. These systems support data exchange of the different related LRU's and they are typically operated via Flight Attendant Panels.</p> <p>The Cabin Network Service typically consists on a server, typically interfacing with, among others, the following systems: — Data/Radio Communication, In-Flight Entertainment System.</p> <p>The Cabin Network Service may host functions such as: — Access to pre-departure/departure reports, — E-mail/intranet/Internet access, — Passenger database; Cabin Core System; In-flight Entertainment System; External Communication System; Cabin Mass Memory System; Cabin Monitoring System; Miscellaneous Cabin System.</p>					
<p>11.21 Information Systems (ATA46)</p> <p>The units and components which furnish a means of storing, updating and retrieving digital information traditionally provided on paper, microfilm or microfiche. Includes units that are dedicated to the information storage and retrieval function such as the electronic library mass storage and controller. Does not include units or components installed for other uses and shared with other systems, such as flight deck printer or general use display.</p> <p>Typical examples include Air Traffic and Information Management Systems and Network Server Systems</p> <p>Aircraft General Information System; Flight Deck Information System; Maintenance Information System; Passenger Cabin Information System; Miscellaneous Information System.</p>	1	2			
<p>MODULE 11B. PISTON AEROPLANE AERODYNAMICS, STRUCTURES AND SYSTEMS</p> <p><i>Note 1:</i> This module does not apply to category B3. Relevant subject matters for category B3 are defined in module 11C.</p> <p><i>Note 2:</i> The scope of this Module shall reflect the technology of aeroplanes pertinent to the A2 and B1.2 subcategory</p>					
	LEVEL				
	A2	B1.2			
<p>11.1 Theory of Flight 11.1.1. Aeroplane Aerodynamics and Flight Controls</p>	1	2			

<p>Operation and effect of: — roll control: ailerons and spoilers, — pitch control: elevators, stabilators, variable incidence stabilisers and canards, — yaw control, rudder limiters;</p> <p>Control using elevons, ruddervators;</p> <p>High lift devices, slots, slats, flaps, flaperons;</p> <p>Drag inducing devices, spoilers, lift dumpers, speed brakes;</p> <p>Effects of wing fences, saw tooth leading edges;</p> <p>Boundary layer control using, vortex generators, stall wedges or leading edge devices;</p> <p>Operation and effect of trim tabs, balance and antibalance (leading) tabs, servo tabs, spring tabs, mass balance, control surface bias, aerodynamic balance panels.</p>					
11.1.2. High Speed Flight — N/A	-	-			
<p>11.2 Airframe Structures — General Concepts</p> <p>(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.</p>	2	2			
<p>(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.</p>	1	2			
<p>11.3 Airframe Structures — Aeroplanes</p> <p>11.3.1 Fuselage (ATA 52/53/56)</p> <p>Construction and pressurisation sealing;</p> <p>Wing, tail-plane, pylon and undercarriage attachments;</p> <p>Seat installation;</p> <p>Doors and emergency exits: construction and operation;</p> <p>Windows and windscreen attachment.</p>	1	2			
<p>11.3.2 Wings (ATA 57)</p> <p>Construction;</p> <p>Fuel storage;</p> <p>Landing gear, pylon, control surface and high lift/drag attachments.</p>	1	2			
<p>11.3.3 Stabilisers (ATA 55)</p> <p>Construction;</p>	1	2			

11.9 Flight Controls (ATA 27) Primary controls: aileron, elevator, rudder; Trim tabs; High lift devices; System operation: manual; Gust locks; Balancing and rigging; Stall warning system.	1	3			
11.10 Fuel Systems (ATA 28) System lay-out; Fuel tanks; Supply systems; Cross-feed and transfer; Indications and warnings; Refuelling and defuelling.	1	3			
11.11 Hydraulic Power (ATA 29) System lay-out; Hydraulic fluids; Hydraulic reservoirs and accumulators; Pressure generation: electric, mechanical; Filters; Pressure Control; Power distribution; Indication and warning systems.	1	3			
11.12 Ice and Rain Protection (ATA 30) Ice formation, classification and detection; De-icing systems: electrical, hot air, pneumatic and chemical; Probe and drain heating; Wiper systems.	1	3			
11.13 Landing Gear (ATA 32) Construction, shock absorbing; Extension and retraction systems: normal and emergency; Indications and warning; Wheels, brakes, antiskid and autobraking; Tyres; Steering; Air-ground sensing.	2	3			
11.14 Lights (ATA 33) External: navigation, anti collision, landing, taxiing, ice; Internal: cabin, cockpit, cargo; Emergency	2	3			

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) Batteries Installation and Operation; DC power generation; Voltage regulation; Power distribution; Circuit protection; Inverters, transformers.	2				
11.7 Equipment and Furnishings (ATA 25) Emergency equipment requirements; Seats, harnesses and belts.	2				
11.8 Fire Protection (ATA 26) Portable fire extinguisher.	2				
11.9 Flight Controls (ATA 27) Primary controls: aileron, elevator, rudder; Trim tabs; High lift devices; System operation: manual; Gust locks; Balancing and rigging; Stall warning system.	3				
11.10 Fuel Systems (ATA 28) System lay-out; Fuel tanks; Supply systems; Cross-feed and transfer; Indications and warnings; Refuelling and defuelling.	2				
11.11 Hydraulic Power (ATA 29) System lay-out; Hydraulic fluids; Hydraulic reservoirs and accumulators; Pressure generation: electric, mechanical; Filters; Pressure Control; Power distribution; Indication and warning systems.	2				
11.12 Ice and Rain Protection (ATA 30) Ice formation, classification and detection; De-icing systems: electrical, hot air, pneumatic and chemical; Probe and drain heating;	1				

Wiper systems.					
11.13 Landing Gear (ATA 32) Construction, shock absorbing; Extension and retraction systems: normal and emergency; Indications and warning; Wheels, brakes, antiskid and autobraking; Tyres; Steering.	2				
11.14 Lights (ATA 33) External: navigation, anti collision, landing, taxiing, ice; Internal: cabin, cockpit, cargo; Emergency.	2				
11.15 Oxygen (ATA 35) System lay-out: cockpit, cabin; Sources, storage, charging and distribution; Supply regulation; Indications and warnings.	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.	2				
MODULE 12. HELICOPTER AERODYNAMICS, STRUCTURES AND SYSTEMS					
	LEVEL				
	A3 A4	B1.3 B1.4			
12.1 Theory of Flight — Rotary Wing Aerodynamics Terminology; Effects of gyroscopic precession; Torque reaction and directional control; Dissymmetry of lift, Blade tip stall; Translating tendency and its correction; Coriolis effect and compensation; Vortex ring state, power settling, overpitching; Auto-rotation; Ground effect.	1	2			
12.2 Flight Control Systems Cyclic control;	2	3			

<p>Collective control; Swashplate; Yaw control: Anti-Torque Control, Tail rotor, bleed air; Main Rotor Head: Design and Operation features; Blade Dampers: Function and construction; Rotor Blades: Main and tail rotor blade construction and attachment; Trim control, fixed and adjustable stabilisers; System operation: manual, hydraulic, electrical and fly-by-wire; Artificial feel; Balancing and rigging.</p>					
<p>12.3 Blade Tracking and Vibration Analysis Rotor alignment; Main and tail rotor tracking; Static and dynamic balancing; Vibration types, vibration reduction methods; Ground resonance.</p>	1	3			
<p>12.4 Transmission Gear boxes, main and tail rotors; Clutches, free wheel units and rotor brake; Tail rotor drive shafts, flexible couplings, bearings, vibration dampers and bearing hangers.</p>	1	3			
<p>12.5 Airframe Structures (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; (b) Construction methods of: stressed skin fuselage, formers, stringers, longerons, bulkheads, frames, doublers, struts, ties, beams, floor structures, reinforcement, methods of skinning and anti-corrosive protection. Pylon, stabiliser and undercarriage attachments; Seat installation; Doors: construction, mechanisms, operation and safety devices; Windows and windscreen construction; Fuel storage; Firewalls; Engine mounts; 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.</p>	2 1	2 2			
<p>12.6 Air Conditioning (ATA 21) 12.6.1 Air supply</p>	1	2			

<p>Sources of air supply including engine bleed and ground cart.</p> <p>12.6.2 Air conditioning</p> <p>Air conditioning systems;</p> <p>Distribution systems;</p> <p>Flow and temperature control systems;</p> <p>Protection and warning devices.</p>	1	3			
<p>12.7 Instruments/Avionic Systems</p> <p>12.7.1 Instrument Systems (ATA 31)</p> <p>Pitot static: altimeter, air speed indicator, vertical speed indicator;</p> <p>Gyroscopic: artificial horizon, attitude director, direction indicator, horizontal situation indicator, turn and slip indicator, turn coordinator;</p> <p>Compasses: direct reading, remote reading;</p> <p>Vibration indicating systems — HUMS;</p> <p>Glass cockpit;</p> <p>Other aircraft system indication.</p> <p>12.7.2 Avionic Systems</p> <p>Fundamentals of system layouts and operation of: Auto Flight (ATA 22); Communications (ATA 23); Navigation Systems (ATA 34).</p>	1	2			
<p>12.8 Electrical Power (ATA 24)</p> <p>Batteries Installation and Operation;</p> <p>DC power generation, AC power generation;</p> <p>Emergency power generation;</p> <p>Voltage regulation, Circuit protection.</p> <p>Power distribution;</p> <p>Inverters, transformers, rectifiers;</p> <p>External/Ground power.</p>	1	3			
<p>12.9 Equipment and Furnishings (ATA 25)</p> <p>(a) Emergency equipment requirements; Seats, harnesses and belts; Lifting systems;</p> <p>(b) Emergency flotation systems; Cabin lay-out, cargo retention; Equipment lay-out; Cabin Furnishing Installation.</p>	2 1	2 1			
<p>12.10 Fire Protection (ATA 26)</p> <p>Fire and smoke detection and warning systems;</p> <p>Fire extinguishing systems;</p> <p>System tests</p>	1	3			
<p>12.11 Fuel Systems (ATA 28)</p> <p>System lay-out;</p> <p>Fuel tanks;</p> <p>Supply systems;</p> <p>Dumping, venting and draining;</p>	1	3			

Cross-feed and transfer; Indications and warnings; Refuelling and defuelling.					
12.12 Hydraulic Power (ATA 29) System lay-out; Hydraulic fluids; Hydraulic reservoirs and accumulators; Pressure generation: electric, mechanical, pneumatic; Emergency pressure generation; Filters; Pressure Control; Power distribution; Indication and warning systems; Interface with other systems.	1	3			
12.13 Ice and Rain Protection (ATA 30) Ice formation, classification and detection; Anti-icing and De-icing systems: electrical, hot air and chemical; Rain repellent and removal; Probe and drain heating; Wiper system.	1	3			
12.14 Landing Gear (ATA 32) Construction, shock absorbing; Extension and retraction systems: normal and emergency; Indications and warning; Wheels, Tyres, brakes; Steering; Air-ground sensing; Skids, floats.	2	3			
12.15 Lights (ATA 33) External: navigation, landing, taxiing, ice; Internal: cabin, cockpit, cargo; Emergency.	2	3			
12.16 Pneumatic/Vacuum (ATA 36) System lay-out; Sources: engine/APU, compressors, reservoirs, ground supply; Pressure control; Distribution; Indications and warnings; Interfaces with other systems.	1	3			
12.17 Integrated Modular Avionics (ATA42)	1	2			

<p>Functions that may be typically integrated in the Integrated Modular Avionic (IMA) modules are, among others: Bleed Management, Air Pressure Control, Air Ventilation and Control, Avionics and Cockpit Ventilation Control, Temperature Control, Air Traffic Communication, Avionics Communication Router, Electrical Load Management, Circuit Breaker Monitoring, Electrical System BITE, Fuel Management, Braking Control, Steering Control, Landing Gear Extension and Retraction, Tyre Pressure Indication, Oleo Pressure Indication, Brake Temperature Monitoring, etc.</p> <p>Core System; Network Components.</p>					
<p>12.18 On Board Maintenance Systems (ATA45)</p> <p>Central maintenance computers; Data loading system; Electronic library system; Printing; Structure monitoring (damage tolerance monitoring).</p>	1	2			
<p>12.19 Information Systems (ATA46)</p> <p>The units and components which furnish a means of storing, updating and retrieving digital information traditionally provided on paper, microfilm or microfiche. Includes units that are dedicated to the information storage and retrieval function such as the electronic library mass storage and controller. Does not include units or components installed for other uses and shared with other systems, such as flight deck printer or general use display.</p> <p>Typical examples include Air Traffic and Information Management Systems and Network Server Systems.</p> <p>Aircraft General Information System; Flight Deck Information System; Maintenance Information System; Passenger Cabin Information System; Miscellaneous Information System.</p>	1	2			
MODULE 13. AIRCRAFT AERODYNAMICS, STRUCTURES AND SYSTEMS					
	LEVEL				
	B2				
<p>13.1 Theory of Flight</p> <p>(a) Aeroplane Aerodynamics and Flight Controls</p> <p>Operation and effect of: — roll control: ailerons and spoilers, — pitch control: elevators, stabilators, variable incidence stabilisers and canards, — yaw control, rudder limiters;</p> <p>Control using elevons, ruddervators;</p> <p>High lift devices: slots, slats, flaps;</p>	1				

<p>Drag inducing devices: spoilers, lift dumpers, speed brakes;</p> <p>Operation and effect of trim tabs, servo tabs, control surface bias;</p> <p>(b) High Speed Flight</p> <p>Speed of sound, subsonic flight, transonic flight, supersonic flight;</p> <p>Mach number, critical Mach number;</p> <p>(c) Rotary Wing Aerodynamics</p> <p>Terminology;</p> <p>Operation and effect of cyclic, collective and anti-torque controls.</p>	1				
<p>13.2 Structures — General Concepts</p> <p>(a) Fundamentals of structural systems;</p> <p>(b) Zonal and station identification systems; Electrical bonding; Lightning strike protection provision.</p>	1 2				
<p>13.3 Autoflight (ATA 22)</p> <p>Fundamentals of automatic flight control including working principles and current terminology;</p> <p>Command signal processing;</p> <p>Modes of operation: roll, pitch and yaw channels;</p> <p>Yaw dampers;</p> <p>Stability Augmentation System in helicopters;</p> <p>Automatic trim control;</p> <p>Autopilot navigation aids interface;</p> <p>Autothrottle systems;</p> <p>Automatic Landing Systems: principles and categories, modes of operation, approach, glideslope, land, go-around, system monitors and failure conditions.</p>	3				
<p>13.4 Communication/Navigation (ATA 23/34)</p> <p>Fundamentals of radio wave propagation, antennas, transmission lines, communication, receiver and transmitter;</p> <p>Working principles of following systems: — Very High Frequency (VHF) communication, — High Frequency (HF) communication, — Audio, — Emergency Locator Transmitters, — Cockpit Voice Recorder, — Very High Frequency omnidirectional range (VOR), — Automatic Direction Finding (ADF), — Instrument Landing System (ILS), — Microwave Landing System (MLS), — Flight Director systems, Distance Measuring Equipment (DME), — Very Low Frequency and hyperbolic navigation (VLF/Omega), — Doppler navigation, — Area navigation, RNAV systems, — Flight Management Systems, — Global Positioning System (GPS), Global Navigation Satellite Systems (GNSS), — Inertial Navigation System, — Air Traffic Control transponder, secondary surveillance radar, — Traffic Alert and Collision Avoidance System (TCAS), — Weather</p>	3				

avoidance radar, — Radio altimeter, — ARINC communication and reporting.					
13.5 Electrical Power (ATA 24) Batteries Installation and Operation; DC power generation; AC power generation; Emergency power generation; Voltage regulation; Power distribution; Inverters, transformers, rectifiers; Circuit protection; External/Ground power.	3				
13.6 Equipment and Furnishings (ATA 25) Electronic emergency equipment requirements; Cabin entertainment equipment.	3				
13.7 Flight Controls (ATA 27) (a) Primary controls: aileron, elevator, rudder, spoiler; Trim control; Active load control; High lift devices; Lift dump, speed brakes; System operation: manual, hydraulic, pneumatic; Artificial feel, Yaw damper, Mach trim, rudder limiter, gust locks. Stall protection systems; (b) System operation: electrical, fly-by-wire.	2 3				
13.8 Instruments (ATA 31) Classification; Atmosphere; Terminology; Pressure measuring devices and systems; Pitot static systems; Altimeters; Vertical speed indicators; Airspeed indicators; Machmeters; Altitude reporting/alerting systems; Air data computers; Instrument pneumatic systems; Direct reading pressure and temperature gauges; Temperature indicating systems; Fuel quantity indicating systems; Gyroscopic principles; Artificial horizons; Slip indicators; Directional gyros; Ground Proximity Warning Systems; Compass systems; Flight Data Recording systems;	3				

Electronic Flight Instrument Systems; Instrument warning systems including master warning systems and centralised warning panels; Stall warning systems and angle of attack indicating systems; Vibration measurement and indication; Glass cockpit.					
13.9 Lights (ATA 33) External: navigation, landing, taxiing, ice; Internal: cabin, cockpit, cargo; Emergency.	3				
13.10 On Board Maintenance Systems (ATA 45) Central maintenance computers; Data loading system; Electronic library system; Printing; Structure monitoring (damage tolerance monitoring).	3				
13.11 Air Conditioning and Cabin Pressurisation (ATA21) 13.11.1. Air supply Sources of air supply including engine bleed, APU and ground cart; 13.11.2. Air Conditioning Air conditioning systems; Air cycle and vapour cycle machines; Distribution systems; Flow, temperature and humidity control system. 13.11.3. Pressurisation Pressurisation systems; Control and indication including control and safety valves; Cabin pressure controllers. 13.11.4. Safety and warning devices Protection and warning devices.	2 2 3 1 3 3 3 3				
13.12 Fire Protection (ATA 26) (a) Fire and smoke detection and warning systems; Fire extinguishing systems; System tests; (b) Portable fire extinguisher.	3 1				
13.13 Fuel Systems (ATA 28) System lay-out; Fuel tanks; Supply systems; Dumping, venting and draining; Cross-feed and transfer;	1 1 1 1 2				

Indications and warnings;	3				
Refuelling and defuelling;	2				
Longitudinal balance fuel systems.	3				
13.14 Hydraulic Power (ATA 29)					
System lay-out;	1				
Hydraulic fluids;	1				
Hydraulic reservoirs and accumulators;	1				
Pressure generation: electrical, mechanical, pneumatic;	3				
Emergency pressure generation;	3				
Filters;	1				
Pressure control;	3				
Power distribution;	1				
Indication and warning systems;	3				
Interface with other systems.	3				
13.15 Ice and Rain Protection (ATA 30)					
Ice formation, classification and detection;	2				
Anti-icing systems: electrical, hot air and chemical;	2				
De-icing systems: electrical, hot air, pneumatic, chemical;	3				
	1				
Rain repellent;	3				
Probe and drain heating;	1				
Wiper Systems.					
13.16 Landing Gear (ATA 32)					
Construction, shock absorbing;	1				
Extension and retraction systems: normal and emergency;	3				
	3				
Indications and warnings;	3				
Wheels, brakes, antiskid and autobraking;	1				
Tyres;	3				
Steering;	3				
Air-ground sensing.					
13.17 Oxygen (ATA 35)					
System lay-out: cockpit, cabin;	3				
Sources, storage, charging and distribution;	3				
Supply regulation;	3				
Indications and warnings	3				
13.18 Pneumatic/Vacuum (ATA 36)					
System lay-out;	2				
Sources: engine/APU, compressors, reservoirs, ground supply;	2				
	3				
Pressure control;	1				
Distribution;	1				
Filters;	3				
Pressure control;	1				

Power distribution;	3				
Indication and warning systems;	3				
Interface with other systems.					
13.15 Ice and Rain Protection (ATA 30)					
Ice formation, classification and detection;	2				
Anti-icing systems: electrical, hot air and chemical;	2				
De-icing systems: electrical, hot air, pneumatic, chemical;	3				
	1				
Rain repellent;	3				
Probe and drain heating;	1				
Wiper Systems.					
13.16 Landing Gear (ATA 32)					
Construction, shock absorbing;	1				
Extension and retraction systems: normal and emergency;	3				
	3				
Indications and warnings;	3				
Wheels, brakes, antiskid and autobraking;	1				
Tyres;	3				
Steering;	3				
Air-ground sensing.					
13.17 Oxygen (ATA 35)					
System lay-out: cockpit, cabin;	3				
Sources, storage, charging and distribution;	3				
Supply regulation;	3				
Indications and warnings.	3				
13.18 Pneumatic/Vacuum (ATA 36)					
System lay-out;	2				
Sources: engine/APU, compressors, reservoirs, ground supply;	2				
	3				
Pressure control;	1				
Distribution;	3				
Indications and warnings;	3				
Interfaces with other systems					
13.19 Water/Waste (ATA 38)					
Water system lay-out, supply, distribution, servicing and draining;	2				
Toilet system lay-out, flushing and servicing.					
13.20 Integrated Modular Avionics (ATA42)					
Functions that may be typically integrated in the Integrated Modular Avionic (IMA) modules are, among others: Bleed Management, Air Pressure Control, Air Ventilation and Control, Avionics and Cockpit Ventilation Control, Temperature Control, Air Traffic Communication, Avionics Communication Router, Electrical Load Management, Circuit Breaker Monitoring, Electrical System BITE, Fuel Management,	3				

<p>Braking Control, Steering Control, Landing Gear Extension and Retraction, Tyre Pressure Indication, Oleo Pressure Indication, Brake Temperature Monitoring, etc.;</p> <p>Core System;</p> <p>Network Components.</p>					
<p>13.21 Cabin Systems (ATA44)</p> <p>The units and components which furnish a means of entertaining the passengers and providing communication within the aircraft (Cabin Intercommunication Data System) and between the aircraft cabin and ground stations (Cabin Network Service). Includes voice, data, music and video transmissions.</p> <p>The Cabin Intercommunication Data System provides an interface between cockpit/cabin crew and cabin systems. These systems support data exchange of the different related LRU's and they are typically operated via Flight Attendant Panels.</p> <p>The Cabin Network Service typically consists on a server, typically interfacing with, among others, the following systems: — Data/Radio Communication, In-Flight Entertainment System.</p> <p>The Cabin Network Service may host functions such as: — Access to pre-departure/departure reports, — E-mail/intranet/Internet access, — Passenger database;</p> <p>Cabin Core System;</p> <p>In-flight Entertainment System;</p> <p>External Communication System;</p> <p>Cabin Mass Memory System;</p> <p>Cabin Monitoring System;</p> <p>Miscellaneous Cabin System.</p>	3				
<p>13.22 Information Systems (ATA46)</p> <p>The units and components which furnish a means of storing, updating and retrieving digital information traditionally provided on paper, microfilm or microfiche. Includes units that are dedicated to the information storage and retrieval function such as the electronic library mass storage and controller. Does not include units or components installed for other uses and shared with other systems, such as flight deck printer or general use display.</p> <p>Typical examples include Air Traffic and Information Management Systems and Network Server Systems.</p> <p>Aircraft General Information System;</p> <p>Flight Deck Information System;</p> <p>Maintenance Information System;</p> <p>Passenger Cabin Information System;</p> <p>Miscellaneous Information System.</p>	3				

MODULE 14. PROPULSION					
	LEVEL				
	B2				
14.1 Turbine Engines (a) Constructional arrangement and operation of turbojet, turbofan, turboshaft and turbopropeller engines; (b) Electronic Engine control and fuel metering systems (FADEC).	1 2				
14.2 Engine Indicating Systems Exhaust gas temperature/Interstage turbine temperature systems; Engine speed; Engine Thrust Indication: Engine Pressure Ratio, engine turbine discharge pressure or jet pipe pressure systems; Oil pressure and temperature; Fuel pressure, temperature and flow; Manifold pressure; Engine torque; Propeller speed.	2				
14.3 Starting and Ignition Systems Operation of engine start systems and components; Ignition systems and components; Maintenance safety requirements	2				
MODULE 15. GAS TURBINE ENGINE					
	LEVEL				
	A	B1			
15.1 Fundamentals Potential energy, kinetic energy, Newton's laws of motion, Brayton cycle; The relationship between force, work, power, energy, velocity, acceleration; Constructional arrangement and operation of turbojet, turbofan, turboshaft, turboprop.	1	2			
15.2 Engine Performance Gross thrust, net thrust, choked nozzle thrust, thrust distribution, resultant thrust, thrust horsepower, equivalent shaft horsepower, specific fuel consumption; Engine efficiencies; By-pass ratio and engine pressure ratio; Pressure, temperature and velocity of the gas flow;	-	2			

Engine ratings, static thrust, influence of speed, altitude and hot climate, flat rating, limitations.					
15.3 Inlet Compressor inlet ducts Effects of various inlet configurations; Ice protection.	2	2			
15.4 Compressors Axial and centrifugal types; Constructional features and operating principles and applications; Fan balancing; Operation: Causes and effects of compressor stall and surge; Methods of air flow control: bleed valves, variable inlet guide vanes, variable stator vanes, rotating stator blades; Compressor ratio.	1	2			
15.5 Combustion Section Constructional features and principles of operation.	1	2			
15.6 Turbine Section Operation and characteristics of different turbine blade types; Blade to disk attachment; Nozzle guide vanes; Causes and effects of turbine blade stress and creep.	2	2			
15.7 Exhaust Constructional features and principles of operation; Convergent, divergent and variable area nozzles; Engine noise reduction; Thrust reversers.	1	2			
15.8 Bearings and Seals Constructional features and principles of operation.	-	2			
15.9 Lubricants and Fuels Properties and specifications; Fuel additives; Safety precautions.	1	2			
15.10 Lubrication Systems System operation/lay-out and components.	1	2			
15.11 Fuel Systems Operation of engine control and fuel metering systems including electronic engine control (FADEC); Systems lay-out and components.	1	2			
15.12 Air Systems	1	2			

Operation of engine air distribution and anti-ice control systems, including internal cooling, sealing and external air services.					
15.13 Starting and Ignition Systems Operation of engine start systems and components; Ignition systems and components; Maintenance safety requirements.	1	2			
15.14 Engine Indication Systems Exhaust Gas Temperature/Interstage Turbine Temperature; Engine Thrust Indication: Engine Pressure Ratio, engine turbine discharge pressure or jet pipe pressure systems; Oil pressure and temperature; Fuel pressure and flow; Engine speed; Vibration measurement and indication; Torque; Power.	1	2			
15.15 Power Augmentation Systems Operation and applications; Water injection, water methanol; Afterburner systems.	-	1			
15.16 Turbo-prop Engines Gas coupled/free turbine and gear coupled turbines; Reduction gears; Integrated engine and propeller controls; Overspeed safety devices.	1	2			
15.17 Turbo-shaft Engines Arrangements, drive systems, reduction gearing, couplings, control systems.	1	2			
15.18 Auxiliary Power Units (APUs) Purpose, operation, protective systems.	1	2			
15.19 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			
15.20 Fire Protection Systems Operation of detection and extinguishing systems.	1	2			
15.21 Engine Monitoring and Ground Operation Procedures for starting and ground run-up; Interpretation of engine power output and parameters; Trend (including oil analysis, vibration and boroscope) monitoring;	1	3			

Inspection of engine and components to criteria, tolerances and data specified by engine manufacturer; Compressor washing/cleaning; Foreign Object Damage.					
15.22 Engine Storage and Preservation Preservation and depreservation for the engine and accessories/systems.	-	2			
MODULE 16. PISTON ENGINE					
	LEVEL				
	A	B1	B3		
16.1 Fundamentals Mechanical, thermal and volumetric efficiencies; Operating principles — 2 stroke, 4 stroke, Otto and Diesel; Piston displacement and compression ratio; Engine configuration and firing order.	1	2	2		
16.2 Engine Performance Power calculation and measurement; Factors affecting engine power; Mixtures/leaning, pre-ignition.	1	2	2		
16.3 Engine Construction Crank case, crank shaft, cam shafts, sumps; Accessory gearbox; Cylinder and piston assemblies; Connecting rods, inlet and exhaust manifolds; Valve mechanisms; Propeller reduction gearboxes.	1	2	2		
16.4 Engine Fuel Systems 16.4.1 Carburettors Types, construction and principles of operation; Icing and heating. 16.4.2 Fuel injection systems Types, construction and principles of operation. 16.4.3 Electronic engine control Operation of engine control and fuel metering systems including electronic engine control (FADEC); Systems lay-out and components.	1 1 1	2 2 2	2 2 2		
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	1	2	2		

Construction and operation of: induction systems including alternate air systems; Exhaust systems, engine cooling systems — air and liquid.					
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 17A. PROPELLER					
<i>Note:</i> This module does not apply to category B3. Relevant subject matters for category B3 are defined in module 17B.					
	LEVEL				
	A	B1			
17.1 Fundamentals	1	2			

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.					
17.2 Propeller Construction Construction methods and materials used in wooden, composite and metal propellers; Blade station, blade face, blade shank, blade back and hub assembly; Fixed pitch, controllable pitch, constant speed propeller; Propeller/spinner installation.	1	2			
17.3 Propeller Pitch Control Speed control and pitch change methods, mechanical and electrical/electronic; Feathering and reverse pitch; Overspeed protection.	1	2			
17.4 Propeller Synchronising Synchronising and synchrophasing equipment.	-	2			
17.5 Propeller Ice Protection Fluid and electrical de-icing equipment.	1	2			
17.6 Propeller Maintenance Static and dynamic balancing; Blade tracking; Assessment of blade damage, erosion, corrosion, impact damage, delamination; Propeller treatment/repair schemes; Propeller engine running.	1	3			
17.7 Propeller Storage and Preservation Propeller preservation and depreservation.	1	2			
MODULE 17B. PROPELLER					
<i>Note:</i> The scope of this Module shall reflect the propeller technology of aeroplanes pertinent to the B3 category.					
	LEVEL				
	B3				
17.1 Fundamentals Blade element theory; High/low blade angle, reverse angle, angle of attack, rotational speed; Propeller slip;	2				

Aerodynamic, centrifugal, and thrust forces; Torque; Relative airflow on blade angle of attack; Vibration and resonance.					
17.2 Propeller Construction Construction methods and material used in wooden, composite and metal propellers; Blade station, blade face, blade shank, blade back and hub assembly; Fixed pitch, controllable pitch, constant speed propeller; Propeller/spinner installation.	2				
17.3 Propeller Pitch Control Speed control and pitch change methods, mechanical and electrical/electronic; Feathering and reverse pitch; Overspeed protection.	2				
17.4 Propeller Synchronising Synchronising and synchrophasing equipment.	2				
17.5 Propeller Ice Protection Fluid and electrical de-icing equipment.	2				
17.6 Propeller Maintenance Static and dynamic balancing; Blade tracking; Assessment of blade damage, erosion, corrosion, impact damage, delamination; Propeller treatment/repair schemes; Propeller engine running.	2				
17.7 Propeller Storage and Preservation Propeller preservation and depreservation	2				

Appendix II

Basic Examination Standard

1. General

- (1) All basic examinations shall be carried out using the multi-choice question format and essay questions as specified below. The incorrect alternatives shall seem equally plausible to anyone ignorant of the subject. All of the alternatives shall be clearly related to the question and of similar vocabulary, grammatical construction and length. In numerical questions, the incorrect answers shall correspond to procedural errors such as corrections applied in the wrong sense or incorrect unit conversions: they shall not be mere random numbers.
- (2) Each multi-choice question shall have three alternative answers of which only one shall be the correct answer and the candidate shall be allowed a time per module which is based upon a nominal average of 75 seconds per question.
- (3) Each essay question requires the preparation of a written answer and the candidate shall be allowed 20 minutes to answer each such question.
- (4) Suitable essay questions shall be drafted and evaluated using the knowledge syllabus in Appendix I Modules 7A, 7B, 9A, 9B and 10.
- (5) Each question will have a model answer drafted for it, which will also include any known alternative answers that may be relevant for other subdivisions.
- (6) The model answer will also be broken down into a list of the important points known as Key Points.
- (7) The pass mark for each module and sub-module multi-choice part of the examination is 75 %.
- (8) The pass mark for each essay question is 75 % in that the candidates answer shall contain 75 % of the required key points addressed by the question and no significant error related to any required key point.
- (9) If either the multi-choice part only or the essay part only is failed, then it is only necessary to retake the multi-choice or essay part, as appropriate.
- (10) Penalty marking systems shall not be used to determine whether a candidate has passed.
- (11) A failed module may not be retaken for at least 90 days following the date of the failed module examination, except in the case of a maintenance training organisation approved in accordance with LYCAR.Part-147 which conducts a course of retraining tailored to the failed subjects in the particular module when the failed module may be retaken after 30 days.
- (12) The time periods required by point 66.A.25 apply to each individual module examination, with the exception of those module examinations which were passed as part of another category licence, where the licence has already been issued.
- (13) The maximum number of consecutive attempts for each module is three. Further sets of three attempts are allowed with a 1 year waiting period between sets.

The applicant shall confirm in writing to the approved maintenance training organisation or the LYCAA to which they apply for an examination, the number and dates of attempts during the last year and the organisation or the LYCAA where these attempts took place. The maintenance training organisation or the LYCAA is responsible for checking the number of attempts within the applicable timeframes.

2. Number of questions per module

(1) MODULE 1 — MATHEMATICS

Category A: 16 multi-choice and 0 essay questions. Time allowed 20 minutes.

Category B1: 32 multi-choice and 0 essay questions. Time allowed 40 minutes.

Category B2: 32 multi-choice and 0 essay questions. Time allowed 40 minutes.

Category B3: 28 multi-choice and 0 essay questions. Time allowed 35 minutes.

(2) MODULE 2 — PHYSICS

Category A: 32 multi-choice and 0 essay questions. Time allowed 40 minutes.

Category B1: 52 multi-choice and 0 essay questions. Time allowed 65 minutes.

Category B2: 52 multi-choice and 0 essay questions. Time allowed 65 minutes.

Category B3: 28 multi-choice and 0 essay questions. Time allowed 35 minutes.

(3) MODULE 3 — ELECTRICAL FUNDAMENTALS

Category A: 20 multi-choice and 0 essay questions. Time allowed 25 minutes.

Category B1: 52 multi-choice and 0 essay questions. Time allowed 65 minutes.

Category B2: 52 multi-choice and 0 essay questions. Time allowed 65 minutes.

Category B3: 24 multi-choice and 0 essay questions. Time allowed 30 minutes.

(4) MODULE 4 — ELECTRONIC FUNDAMENTALS

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.

(5) MODULE 5 — DIGITAL TECHNIQUES/ELECTRONIC INSTRUMENT SYSTEMS

Category A: 16 multi-choice and 0 essay questions. Time allowed 20 minutes.

Category B1.1 and B1.3: 40 multi-choice and 0 essay questions. Time allowed 50 minutes.

Category B1.2 and B1.4: 20 multi-choice and 0 essay questions. Time allowed 25 minutes.

Category B2: 72 multi-choice and 0 essay questions. Time allowed 90 minutes.

Category B3: 16 multi-choice and 0 essay questions. Time allowed 20 minutes.

(6) MODULE 6 — MATERIALS AND HARDWARE

Category A: 52 multi-choice and 0 essay questions. Time allowed 65 minutes.

Category B1: 72 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.

(7) MODULE 7A — MAINTENANCE PRACTICES

Category A: 72 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.

MODULE 7B — MAINTENANCE PRACTICES

Category B3: 60 multi-choice and 2 essay questions. Time allowed 75 minutes plus 40 minutes.

(8) 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.

(9) MODULE 9A — 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.

MODULE 9B — HUMAN FACTORS

Category B3: 16 multi-choice and 1 essay questions. Time allowed 20 minutes plus 20 minutes.

(10) MODULE 10 — AVIATION LEGISLATION

Category A: 32 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 minute

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.

(11) MODULE 11A — TURBINE AEROPLANE AERODYNAMICS, STRUCTURES AND SYSTEMS

Category A: 108 multi-choice and 0 essay questions. Time allowed 135 minutes.

Category B1: 140 multi-choice and 0 essay questions. Time allowed 175 minutes.

MODULE 11B — PISTON AEROPLANE AERODYNAMICS, STRUCTURES AND SYSTEMS

Category A: 72 multi-choice and 0 essay questions. Time allowed 90 minutes.

Category B1: 100 multi-choice and 0 essay questions. Time allowed 125 minutes.

MODULE 11C — PISTON AEROPLANE AERODYNAMICS, STRUCTURES AND SYSTEMS

Category B3: 60 multi-choice and 0 essay questions. Time allowed 75 minutes.

(12) MODULE 12 — HELICOPTER AERODYNAMICS, STRUCTURES AND SYSTEMS

Category A: 100 multi-choice and 0 essay questions. Time allowed 125 minutes.

Category B1: 128 multi-choice and 0 essay questions. Time allowed 160 minutes.

(13) MODULE 13 — AIRCRAFT AERODYNAMICS, STRUCTURES AND SYSTEMS

Category B2: 180 multi-choice and 0 essay questions. Time allowed 225 minutes. Questions and time allowed may be split into two examinations as appropriate.

(14) MODULE 14 — PROPULSION

Category B2: 24 multi-choice and 0 essay questions. Time allowed 30 minutes.

(15) MODULE 15 — GAS TURBINE ENGINE

Category A: 60 multi-choice and 0 essay questions. Time allowed 75 minutes.

Category B1: 92 multi-choice and 0 essay questions. Time allowed 115 minutes.

(16) MODULE 16 — PISTON ENGINE

Category A: 52 multi-choice and 0 essay questions. Time allowed 65 minutes.

Category B1: 72 multi-choice and 0 essay questions. Time allowed 90 minutes.

Category B3: 68 multi-choice and 0 essay questions. Time allowed 85 minutes.

(17) MODULE 17A — PROPELLER

Category A: 20 multi-choice and 0 essay questions. Time allowed 25 minutes.

Category B1: 32 multi-choice and 0 essay questions. Time allowed 40 minutes.

MODULE 17B — PROPELLER

Category B3: 28 multi-choice and 0 essay questions. Time allowed 35 minutes.

Appendix III

Aircraft Type Training and Examination Standard

On the Job Training

1. General

Aircraft type training shall consist of theoretical training and examination, and, except for the category C ratings, practical training and assessment.

(a) Theoretical training and examination shall comply with the following requirements:

- (i) Shall be conducted by a maintenance training organisation appropriately approved in accordance with LYCAR.Part-147 or, when conducted by other organisations, as directly approved by the LYCAA.
- (ii) Shall comply with the standard described in paragraph 3.1 and 4 of this Appendix III, except as permitted by the differences training described below.
- (iii) In the case of a category C person qualified by holding an academic degree as specified in point 66.A.30(a)(5), the first relevant aircraft type theoretical training shall be at the category B1 or B2 level.
- (iv) Shall have been started and completed within the 3 years preceding the application for a type rating endorsement.

(b) Practical training and assessment shall comply with the following requirements:

- (i) Shall be conducted by a maintenance training organisation appropriately approved in accordance with LYCAR.147 or, when conducted by other organisations, as directly approved by the LYCAA.
- (ii) Shall comply with the standard described in paragraph 3.2 and 4 of this Appendix III, except as permitted by the differences training described below.
- (iii) Shall include a representative cross section of maintenance activities relevant to the aircraft type.
- (iv) Shall include demonstrations using equipment, components, simulators, other training devices or aircraft.
- (v) Shall have been started and completed within the 3 years preceding the application for a type rating endorsement.

(c) Differences training

- (i) Differences training is the training required in order to cover the differences between two different aircraft type ratings of the same manufacturer as determined by the LYCAA.
- (ii) Differences training has to be defined on a case-to-case basis taking into account the requirements contained in this Appendix III in respect of both theoretical and practical elements of type rating training.
- (iii) A type rating shall only be endorsed on a licence after differences training when the applicant also complies with one of the following conditions:
 - Having already endorsed on the licence the aircraft type rating from which the differences are being identified, or
 - Having completed the type training requirements for the aircraft from which the differences are being identified.

2. Aircraft type training levels

The three levels listed below define the objectives, the depth of training and the level of knowledge that the training is intended to achieve.

- Level 1: A brief overview of the airframe, systems and powerplant as outlined in the Systems Description Section of the Aircraft Maintenance Manual/Instructions for Continued Airworthiness.

Course objectives: Upon completion of Level 1 training, the student will be able to:

- (a) Provide a simple description of the whole subject, using common words and examples, using typical terms and identify safety precautions related to the airframe, its systems and powerplant;
 - (b) Identify aircraft manuals, maintenance practices important to the airframe, its systems and powerplant;
 - (c) Define the general layout of the aircraft's major systems;
 - (d) Define the general layout and characteristics of the powerplant;
 - (e) Identify special tooling and test equipment used with the aircraft.
- Level 2: Basic system overview of controls, indicators, principal components, including their location and purpose, servicing and minor troubleshooting. General knowledge of the theoretical and practical aspects of the subject.

Course objectives: In addition to the information contained in the Level 1 training, at the completion of Level 2 training, the student will be able to:

- (a) Understand the theoretical fundamentals; apply knowledge in a practical manner using detailed procedures;
 - (b) Recall the safety precautions to be observed when working on or near the aircraft, powerplant and systems;
 - (c) Describe systems and aircraft handling particularly access, power availability and sources;
 - (d) Identify the locations of the principal components;
 - (e) Explain the normal functioning of each major system, including terminology and nomenclature;
 - (f) Perform the procedures for servicing associated with the aircraft for the following systems: Fuel, Power Plants, Hydraulics, Landing Gear, Water/Waste, and Oxygen;
 - (g) Demonstrate proficiency in use of crew reports and on-board reporting systems (minor troubleshooting) and determine aircraft airworthiness per the MEL/CDL;
 - (h) Demonstrate the use, interpretation and application of appropriate documentation including instructions for continued airworthiness, maintenance manual, illustrated parts catalogue, etc.
- Level 3: Detailed description, operation, component location, removal/ installation and bite and troubleshooting procedures to maintenance manual level.

Course objectives: In addition to the information contained in Level 1 and Level 2 training, at the completion of Level 3 training, the student will be able to:

- (a) Demonstrate a theoretical knowledge of aircraft systems and structures and interrelationships with other systems, provide a detailed description of the subject using theoretical fundamentals and specific examples and to interpret results from various sources and measurements and apply corrective action where appropriate;
- (b) Perform system, powerplant, component and functional checks as specified in the aircraft maintenance manual;
- (c) Demonstrate the use, interpret and apply appropriate documentation including structural repair manual, troubleshooting manual, etc.;
- (d) Correlate information for the purpose of making decisions in respect of fault diagnosis and rectification to maintenance manual level;
- (e) Describe procedures for replacement of components unique to aircraft type.

3. Aircraft type training standard

Although aircraft type training includes both theoretical and practical elements, courses can be approved for the theoretical element, the practical element or for a combination of both.

3.1. Theoretical element

- (a) Objective:

On completion of a theoretical training course the student shall be able to demonstrate, to the levels identified in the Appendix III syllabus, the detailed theoretical knowledge of the aircraft's applicable systems, structure, operations, maintenance, repair, and troubleshooting according to approved maintenance data. The student shall be able to demonstrate the use of manuals and approved procedures, including the knowledge of relevant inspections and limitations.

(b) Level of training:

Training levels are those levels defined in point 2 above.

After the first type course for category C certifying staff all subsequent courses need only be to level 1.

During a level 3 theoretical training, level 1 and 2 training material may be used to teach the full scope of the chapter if required. However, during the training the majority of the course material and training time shall be at the higher level.

(c) Duration:

The theoretical training minimum tuition hours are contained in the following table:

Category	Hours
Aeroplanes with a maximum take-off mass above 30 000 kg	
B1.1	150
B1.2	120
B2	100
C	30
Aeroplanes with a maximum take-off mass equal or less than 30 000 kg and above 5 700 kg	
B1.1	120
B1.2	100
B2	100
C	25
Aeroplanes with a maximum take-off mass of 5 700 kg and below ¹	
B1.1	80
B1.2	60
B2	60
C	15
Helicopters ²	
B.3	120
B1.4	100
B2	100
C	25

¹ For non-

pressurised piston engine aeroplanes below 2 000 kg MTOM the minimum duration can be reduced by 50%

² For helicopters in group 2 (as defined in point 66A42) the minimum duration can be reduced by 30%

For the purpose of the table above, a tuition hour means 60 minutes of teaching and excludes any breaks, examination, revision, preparation and aircraft visit.

These hours apply only to theoretical courses for complete aircraft/ engine combinations according to the type rating as defined by the LYCAA.

(d) Justification of course duration:

Training courses carried out in a maintenance training organisation approved in accordance with LYCAR.147 and courses directly approved by the LYCAA shall justify their hour duration and the coverage of the full syllabus by a training needs analysis based on:

- The design of the aircraft type, its maintenance needs and the types of operation,
- Detailed analysis of applicable chapters — see contents table in point 3.1(e) below,
- Detailed competency analysis showing that the objectives as stated in point 3.1(a) above are fully met.

Where the training needs analysis shows that more hours are needed, course lengths shall be longer than the minimum specified in the table.

Similarly, tuition hours of differences courses or other training course combinations (such as combined B1/B2 courses), and in cases of theoretical type training courses below the figures given in point 3.1(c) above, these shall be justified to the LYCAA by the training needs analysis as described above.

In addition, the course must describe and justify the following:

- The minimum attendance required to the trainee, in order to meet the objectives of the course.
- The maximum number of hours of training per day, taking into account pedagogical and human factors principles.

If the minimum attendance required is not met, the certificate of recognition shall not be issued. Additional training may be provided by the training organisation in order to meet the minimum attendance time.

(e) Content:

As a minimum, the elements in the Syllabus below that are specific to the aircraft type shall be covered. Additional elements introduced due to type variations, technological changes, etc. shall also be included.

The training syllabus shall be focused on mechanical and electrical aspects for B1 personnel, and electrical and avionic aspects for B2.

Chapters / Level	Aeroplanes turbine		Aeroplanes piston		Helicopters turbine		Helicopters piston		Avionics
	B1	C	B1	C	B1	C	B1	C	
Licence category	B1	C	B1	C	B1	C	B1	C	B2
Introduction module:	1	1	1	1	1	1	1	1	1
05 Time limits/maintenance checks	1	1	1	1	1	1	1	1	1
06 Dimensions/Areas (MTOM, etc.)	1	1	1	1	1	1	1	1	1
07 Lifting and Shoring	1	1	1	1	1	1	1	1	1
08 Levelling and weighing	1	1	1	1	1	1	1	1	1
09 Towing and taxiing	1	1	1	1	1	1	1	1	1

10 Parking/mooring, Storing and Return to Service	1	1	1	1	1	1	1	1	1
11 Placards and Markings	1	1	1	1	1	1	1	1	1
12 Servicing	1	1	1	1	1	1	1	1	1
20 Standard practices — only type particular	1	1	1	1	1	1	1	1	1
Helicopters									
18 Vibration and Noise Analysis (Blade tracking)	—	—	—	—	3	1	3	1	—
60 Standard Practices Rotor	—	—	—	—	3	1	3	1	—
62 Rotors	—	—	—	—	3	1	3	1	1
62A Rotors — Monitoring and indicating	—	—	—	—	3	1	3	1	3
63 Rotor Drives	—	—	—	—	3	1	3	1	1
63A Rotor Drives — Monitoring and indicating	—	—	—	—	3	1	3	1	3
64 Tail Rotor	—	—	—	—	3	1	3	1	1
64A Tail rotor — Monitoring and indicating	—	—	—	—	3	1	3	1	3
65 Tail Rotor Drive	—	—	—	—	3	1	3	1	1
65A Tail Rotor Drive — Monitoring and indicating	—	—	—	—	3	1	3	1	3
66 Folding Blades/Pylon	—	—	—	—	3	1	3	1	—
67 Rotors Flight Control	—	—	—	—	3	1	3	1	—
53 Airframe Structure (Helicopter)	—	—	—	—	3	1	3	1	—
25 Emergency Flotation Equipment	—	—	—	—	3	1	3	1	1
Airframe structures									
51 Standard practices and structures (damage classification, assessment and repair)	3	1	3	1	—	—	—	—	1
53 Fuselage	3	1	3	1	—	—	—	—	1
54 Nacelles/Pylons	3	1	3	1	—	—	—	—	1
55 Stabilisers	3	1	3	1	—	—	—	—	1
56 Windows	3	1	3	1	—	—	—	—	1
57 Wings	3	1	3	1	—	—	—	—	1
27A Flight Control Surfaces (All)	3	1	3	1	—	—	—	—	1
52 Doors	3	1	3	1	—	—	—	—	1

Zonal and Station Identification Systems.	1	1	1	1	1	1	1	1	1
Airframe systems:									
21 Air Conditioning	3	1	3	1	3	1	3	1	3
21A Air Supply	3	1	3	1	1	3	3	1	2
21B Pressurisation	3	1	3	1	3	1	3	1	3
21C Safety and Warning Devices	3	1	3	1	3	1	3	1	3
22 Autoflight	2	1	2	1	2	1	2	1	3
23 Communications	2	1	2	1	2	1	2	1	3
24 Electrical Power		1	3	1	3	1	3	1	3
25 Equipment and Furnishings		1	3	1	3	1	3	1	1
25A Electronic Equipment including emergency equipment	3	1	1	1	1	1	1	1	3
26 Fire Protection	3	1	3	1	3	1	3	1	3
27 Flight Controls	3	1	3	1	3	1	3	1	2
27A Sys. Operation: Electrical/Fly-by- Wire	3	1	—	—	—	—	—	—	3
28 Fuel Systems	3	1	3	1	3	1	3	1	2
28A Fuel Systems Monitoring and indicating	—	3	1	3	1	3	1	3	1
29 Hydraulic Power	3	1	3	1	3	1	3	1	2
29A Hydraulic Power Monitoring and indicating	—	3	1	3	1	3	1	3	1
30 Ice and Rain Protection	3	1	3	1	3	1	3	1	3
31 Indicating/Recording Systems	3	1	3	1	3	1	3	1	3
31A Instrument Systems	3	1	3	1	3	1	1	3	3
32 Landing Gear	3	1	3	1	3	1	3	1	2
32A Landing Gear Monitoring and indicating	—	3	1	3	1	3	1	3	1
33 Lights	3	1	3	1	3	1	3	1	3
34 Navigation	2	1	2	1	2	1	2	1	3
35 Oxygen	3	1	3	1	—	—	—	—	2
36 Pneumatic	3	1	3	1	3	1	3	1	2
36A Pneumatic Monitoring and indicating	—	3	1	3	1	3	1	3	1
37 Vacuum	3	1	3	1	3	1	3	1	2
38 Water/Waste	3	1	3	1	—	—	—	—	2

41 Water Ballast	3	1	3	1	—	—	—	—	1
42 Integrated modular avionics	2	1	2	1	2	1	2	1	3
44 Cabin Systems	2	1	2	1	2	1	2	1	3
45 On-Board Maintenance System (or covered in 31)	3	1	3	1	3	1	—	—	3
46 Information Systems	2	1	2	1	2	1	2	1	3
50 Cargo and Accessory Compartments	3	1	3	1	3	1	3	1	1
Turbine Engine									
70 Standard Practices — Engines,	3	1	—	—	3	1	—	—	1
70A constructional arrangement and operation (Installation Inlet, Compressors, Combustion Section, Turbine Section, Bearings and Seals, Lubrication Systems).	3	1	—	—	3	1	—	—	1
70B Engine Performance	3	1	—	—	3	1	—	—	1
71 Powerplant	3	1	—	—	3	1	—	—	1
72 Engine Turbine/Turbo Prop/Ducted Fan/Unducted fan	3	1	—	—	3	1	—	—	1
73 Engine Fuel and Control	3	1	—	—	3	1	—	—	1
75 Air	3	1	—	—	3	1	—	—	1
76 Engine controls	3	1	—	—	3	1	—	—	1
78 Exhaust	3	1	—	—	3	1	—	—	1
79 Oil	3	1	—	—	3	1	—	—	1
80 Starting	3	1	—	—	3	1	—	—	1
82 Water Injections	3	1	—	—	3	1	—	—	1
83 Accessory Gear Boxes	3	1	—	—	3	1	—	—	1
84 Propulsion Augmentation	3	1	—	—	3	1	—	—	1
73A FADEC	3	1	—	—	3	1	—	—	1
74 Ignition	3	1	—	—	3	1	—	—	1
77 Engine Indicating Systems	3	1	—	—	3	1	—	—	1
49 Auxiliary Power Units (APUs)	3	1	—	—	3	1	—	—	1
Piston Engine									
70 Standard Practices — Engines	—	—	3	1	—	—	3	1	1

70A Constructional arrangement and operation (Installation, Carburettors, Fuel injection systems, Induction, Exhaust and Cooling Systems, Supercharging/Turbocharging, Lubrication Systems).	—	—	3	1	—	—	3	1	1
70B Engine Performance	—	—	3	1	—	—	3	1	1
71 Powerplant	—	—	3	1	—	—	3	1	1
73 Engine Fuel and Control	—	—	3	1	—	—	3	1	1
76 Engine Control	—	—	3	1	—	—	3	1	1
79 Oil	—	—	3	1	—	—	3	1	1
80 Starting	—	—	3	1	—	—	3	1	1
81 Turbines	—	—	3	1	—	—	3	1	1
82 Water Injections	—	—	3	1	—	—	3	1	1
83 Accessory Gear Boxes	—	—	3	1	—	—	3	1	1
84 Propulsion Augmentation	—	—	3	1	—	—	3	1	1
73A FADEC	—	—	3	1	—	—	3	1	3
74 Ignition	—	—	3	1	—	—	3	1	3
77 Engine Indication Systems	—	—	3	1	—	—	3	1	3
Propellers									
60A Standard Practices — Propeller	3	1	3	1	—	—	—	—	1
61 Propellers/Propulsion	3	1	3	1	—	—	—	—	1
61A Propeller Construction	3	1	3	1	—	—	—	—	—
61B Propeller Pitch Control	3	1	3	1	—	—	—	—	—
61C Propeller Synchronising	3	1	3	1	—	—	—	—	1
61D Propeller Electronic control	3	1	3	1	—	—	—	—	3
61E Propeller Ice Protection	3	1	3	1	—	—	—	—	—
61F Propeller Maintenance	3	1	3	1	—	—	—	—	1

- (f) Multimedia Based Training (MBT) methods may be used to satisfy the theoretical training element either in the classroom or in a virtual controlled environment subject to the acceptance of the LYCAA approving the training course.

3.2. Practical element

(a) Objective:

The objective of practical training is to gain the required competence in performing safe maintenance, inspections and routine work according to the maintenance manual and other relevant instructions and tasks as appropriate for the type of aircraft, for example troubleshooting, repairs, adjustments, replacements, rigging and functional checks. It

includes the awareness of the use of all technical literature and documentation for the aircraft, the use of specialist/special tooling and test equipment for performing removal and replacement of components and modules unique to type, including any on-wing maintenance activity.

(b) Content:

At least 50 % of the crossed items in the table below, which are relevant to the particular aircraft type, shall be completed as part of the practical training.

Tasks crossed represent subjects that are important for practical training purposes to ensure that the operation, function, installation and safety significance of key maintenance tasks is adequately addressed; particularly where these cannot be fully explained by theoretical training alone. Although the list details the minimum practical training subjects, other items may be added where applicable to the particular aircraft type.

Tasks to be completed shall be representative of the aircraft and systems both in complexity and in the technical input required to complete that task. While relatively simple tasks may be included, other more complex tasks shall also be incorporated and undertaken as appropriate to the aircraft type.

Glossary of the table:

LOC: Location;

FOT: Functional/Operational Test;

SGH: Service and Ground Handling;

R/I: Removal/Installation;

MEL: Minimum Equipment List;

TS: TroubleShooting.

Chapters	BA/B 2	B1					B2				
	LOC	FO T	SG H	R/ I	ME L	T S	FO T	SG H	R/ I	ME L	T S
Introduction module: 5 Time limits/maintenance checks	X/X	—	—	—	—	—	—	—	—	—	—
6 Dimensions/Areas (MTOM, etc.)	X/X	—	—	—	—	—	—	—	—	—	—
7 Lifting and Shoring	X/X	—	—	—	—	—	—	—	—	—	—
8 Levelling and weighing	X/X	—	X	—	—	—	—	X	—	—	—
9 Towing and taxiing	X/X	—	X	—	—	—	—	X	—	—	—
10 Parking/mooring, Storing and Return to Service	X/X	—	X	—	—	—	—	X	—	—	—
11 Placards and Markings	X/X	—	—	—	—	—	—	—	—	—	—
12 Servicing	X/X	—	X	—	—	—	—	X	—	—	—
20 Standard practices — only type particular	X/X	—	X	—	—	—	—	X	—	—	—
Helicopters:											
18 Vibration and Noise Analysis (Blade tracking)	X/—	—	—	—	—	X	—	—	—	—	—
60 Standard Practices Rotor — only type specific	X/X	—	X	—	—	—	—	X	—	—	—
62 Rotors	X/—	—	X	X	—	X	—	—	—	—	—
62A Rotors — Monitoring and indicating	X/X	X	X	X	X	X	—	—	X	—	X
63 Rotor Drives	X/—	X	—	—	—	X	—	—	—	—	—
63A Rotor Drives — Monitoring and indicating	X/X	X	—	X	X	X	—	—	X	—	X
64 Tail Rotor	X/—	—	X	—	—	X	—	—	—	—	—
64A Tail rotor - Monitoring and indicating	X/X	X	—	X	X	—	—	X	—	X	X

65 Tail Rotor Drive	X/—	X	—	—	—	X	—	—	—	—	—
65A Tail Rotor Drive — Monitoring and indicating	X/X	X	—	X	X	X	—	—	X	—	X
66 Folding Blades/Pylon	X/—	X	X	—	—	X	—	—	—	—	—
67 Rotors Flight Control	X/—	X	X	—	X	X	—	—	—	—	—
53 Airframe Structure (Helicopter) Note: covered under Airframe structures											
25 Emergency Flotation Equipment	X/X	X	X	X	X	X	X	X	—	—	—
Airframe structures:											
51 Standard Practices and Structures (damage classification, assessment and repair)											
53 Fuselage	X/—	—	—	—	—	X	—	—	—	—	—
54 Nacelles/Pylons	X/—	—	—	—	—	—	—	—	—	—	—
55 Stabilisers	X/—	—	—	—	—	—	—	—	—	—	—
56 Windows	X/—	—	—	—	—	X	—	—	—	—	—
57 Wings	X/—	—	—	—	—	—	—	—	—	—	—
27A Flight Control Surfaces	X/—	—	—	—	—	X	—	—	—	—	—
52 Doors	X/X	X	X	—	—	—	—	X	—	—	—
Airframe systems:											
21 Air Conditioning	X/X	X	X	—	X	X	X	X	—	X	X
21A Air Supply	X/X	X	—	—	—	—	X	—	—	—	—
21B Pressurisation	X/X	X	X	—	X	X	X	X	—	X	X
21C Safety and warning Devices	X/X	—	X	—	—	—	—	X	—	—	—
22 Autoflight	X/X	—	—	—	X	—	X	X	X	X	X
23 Communications	X/X	—	X	—	X	—	X	X	X	X	X
24 Electrical Power	X/X	X	X	X	X	X	X	X	X	X	X

25 Equipment and Furnishings	X/X	X	X	X	—	—	X	X	X	—	—
25A Electronic Equipment including emergency equipment	X/X	X	X	X	—	—	X	X	X	—	—
26 Fire Protection	X/X	X	X	X	X	X	X	X	X	X	X
27 Flight Controls	X/X	X	X	X	X	X	X	—	—	—	—
27A Sys. Operation: Electrical/Fly-by-Wire	X/X	X	X	X	X	—	X	—	X	—	X
28 Fuel Systems	X/X	X	X	X	X	X	X	X	—	X	—
28A Fuel Systems — Monitoring and indicating	X/X	X	—	—	—	—	X	—	X	—	X
29 Hydraulic Power	X/X	X	X	X	X	X	X	X	—	X	—
29A Hydraulic Power — Monitoring and indicating	X/X	X	—	X	X	X	X	—	X	X	X
30 Ice and Rain Protection	X/X	X	X	—	X	X	X	X	—	X	X
31 Indicating/Recording Systems	X/X	X	X	X	X	X	X	X	X	X	X
31A Instrument Systems	X/X	X	X	X	X	X	X	X	X	X	X
32 Landing Gear	X/X	X	X	X	X	X	X	X	X	X	—
32A Landing Gear — Monitoring and indicating	X/X	X	—	X	X	X	X	—	X	X	X
33 Lights	X/X	X	X	—	X	—	X	X	X	X	—
34 Navigation	X/X	—	X	—	X	—	X	X	X	X	X
35 Oxygen	X/—	X	X	X	—	—	X	X	—	—	—
36 Pneumatic	X/—	X	—	X	X	X	X	—	X	X	X
36A Pneumatic — Monitoring and indicating	X/X	X	X	X	X	X	X	X	X	X	X
37 Vacuum	X/—	X	—	X	X	X	—	—	—	—	—
38 Water/Waste	X/—	X	X	—	—	—	X	X	—	—	—
41 Water Ballast	X/—	—	—	—	—	—	—	—	—	—	—
42 Integrated modular avionics	X/X	—	—	—	—	—	X	X	X	X	X
44 Cabin Systems	X/X	—	—	—	—	—	X	X	X	X	X

45 On-Board Maintenance System (or covered in 31)	X/X	X	X	X	X	X	X	X	X	X	X	X
46 Information Systems	X/X	—	—	—	—	—	X	—	X	X	X	X
50 Cargo and Accessory Compartments	X/X	—	X	—	—	—	—	—	—	—	—	—
Turbine/Piston Engine Module:												
70 Standard Practices — Engines — only type particular	—	—	X	—	—	—	—	X	—	—	—	—
70A Constructional arrangement and operation (Installation Inlet, Compressors, Combustion Section, Turbine Section, Bearings and Seals, Lubrication Systems)	X/ X	—	—	—	—	—	—	—	—	—	—	—
Turbine engines: 70B Engine Performance	—	—	—	—	—	X	—	—	—	—	—	—
71 Power Plant	X/—	X	X	—	—	—	—	X	—	—	—	—
72 Engine Turbine/Turbo Prop/Ducted Fan/ Unducted fan	X/—	—	—	—	—	—	—	—	—	—	—	—
73 Engine Fuel and Control	X/X	X	—	—	—	—	—	—	—	—	—	—
73A FADEC Systems	X/X	X	—	X	X	X	X	—	X	X	X	X
74 Ignition	X/X	X	—	—	—	—	X	—	—	—	—	—
75 Air	X/—	—	—	X	—	X	—	—	—	—	—	—
76 Engine Controls	X/—	X	—	—	—	X	—	—	—	—	—	—
77 Engine Indicating	X/X	X	—	—	X	X	X	—	—	X	X	X
78 Exhaust	X/—	X	—	—	X	—	—	—	—	—	—	—
79 Oil	X/—	—	X	X	—	—	—	—	—	—	—	—
80 Starting	X/—	X	—	—	X	X	—	—	—	—	—	—
82 Water Injection	X/—	X	—	—	—	—	—	—	—	—	—	—

83	Accessory Gearboxes	X/—	—	X	—	—	—	—	—	—	—	—
84	Propulsion Augmentation	X/—	X	—	—	—	—	—	—	—	—	—
Auxiliary Power Units (APUs): 49 Auxiliary Power Units (APUs)		X/—	X	X	—	—	X	—	—	—	—	—
Piston Engines:												
70	Standard Practices — Engines — only type particular	—	—	X	—	—	—	—	X	—	—	—
70A	Constructional arrangement and operation (Installation Inlet, Compressors, Combustion Section, Turbine Section, Bearings and Seals, Lubrication Systems)	X/X	—	—	—	—	—	—	—	—	—	—
70B	Engine Performance	—	—	—	—	—	X	—	—	—	—	—
71	Power Plant	X/—	X	X	—	—	—	—	X	—	—	—
73	Engine Fuel and Control	X/X	X	—	—	—	—	—	—	—	—	—
73A	FADEC Systems	X/X	X	—	X	X	X	X	X	X	X	X
74	Ignition	X/X	X	—	—	—	—	X	—	—	—	—
76	Engine Controls	X/—	X	—	—	—	X	—	—	—	—	—
77	Engine Indicating	X/X	X	—	—	X	X	X	—	—	X	X
78	Exhaust	X/—	X	—	—	X	X	—	—	—	—	—
79	Oil	X/—	—	X	X	—	—	—	—	—	—	—
80	Starting	X/—	X	—	—	X	X	—	—	—	—	—
81	Turbines	X/—	X	X	X	—	X	—	—	—	—	—
82	Water Injection	X/—	X	—	—	—	—	—	—	—	—	—
83	Accessory Gearboxes	X/—	—	X	X	—	—	—	—	—	—	—
84	Propulsion Augmentation	X/—	X	—	—	—	—	—	—	—	—	—

Propellers:												
60A Standard Practices Propeller	—	—	—	X	—	—	—	—	—	—	—	—
61 Propellers/Propulsion	X/X	X	X	—	X	X	—	—	—	—	—	—
61A Propeller Construction	X/X	—	X	—	—	—	—	—	—	—	—	—
61B Propeller Pitch Control	X/—	X	—	X	X	X	—	—	—	—	—	—
61C Propeller Synchronising	X/—	X	—	—	—	X	—	—	—	—	X	—
61D Propeller Electronic control	X/X	X	X	X	X	X	X	X	X	X	X	X
61E Propeller Ice Protection	X/—	X	—	X	X	X	—	—	—	—	—	—
61F Propeller Maintenance	X/X	X	X	X	X	X	X	X	X	X	X	X

4. Type training examination and assessment standard

4.1. Theoretical element examination standard

After the theoretical portion of the aircraft type training has been completed, a written examination shall be performed, which shall comply with the following:

- (a) Format of the examination is of the multi-choice type. Each multi-choice question shall have 3 alternative answers of which only one shall be the correct answer. The total time is based on the total number of questions and the time for answering is based upon a nominal average of 90 seconds per question.
- (b) The incorrect alternatives shall seem equally plausible to anyone ignorant of the subject. All the alternatives shall be clearly related to the question and of similar vocabulary, grammatical construction and length.
- (c) In numerical questions, the incorrect answers shall correspond to procedural errors such as the use of incorrect sense (+ versus -) or incorrect measurement units. They shall not be mere random numbers.
- (d) The level of examination for each chapter¹ shall be the one defined in point 2 'Aircraft type training levels'. However, the use of a limited number of questions at a lower level is acceptable.
- (e) The examination shall be of the closed book type. No reference material is permitted. An exception will be made for the case of examining a B1 or B2 candidate's ability to interpret technical documents.
- (f) The number of questions shall be at least 1 question per hour of instruction. The number of questions for each chapter and level shall be proportionate to:
 - The effective training hours spent teaching at that chapter and level,
 - The learning objectives as given by the training needs analysis.

¹ For the purpose of this point 4, a 'chapter' means each one of the rows preceded by a number in the table contained in point 3.1(e).

The LYCAA will assess the number and the level of the questions when approving the course.

- (g) The minimum examination pass mark is 75 %. When the type training examination is split in several examinations, each examination shall be passed with at least a 75 % mark. In order to be possible to achieve exactly a 75 % pass mark, the number of questions in the examination shall be a multiple of 4.
- (h) Penalty marking (negative points for failed questions) is not to be used.
- (i) End of module phase examinations cannot be used as part of the final examination unless they contain the correct number and level of questions required.

4.2. Practical element assessment standard

After the practical element of the aircraft type training has been completed, an assessment must be performed, which must comply with the following:

- (a) The assessment shall be performed by designated assessors appropriately qualified.
- (b) The assessment shall evaluate the knowledge and skills of the trainee.

5. Type examination standard

Type examination shall be conducted by training organisations appropriately approved under LYCAR.Part-147 .

The examination shall be oral, written or practical assessment based, or a combination thereof and it shall comply with the following requirements:

- (a) Oral examination questions shall be open.
- (b) Written examination questions shall be essay type or multi-choice questions.
- (c) Practical assessment shall determine a person's competence to perform a task.
- (d) Examinations shall be on a sample of chapters² drawn from paragraph 3 type training/examination syllabus, at the indicated level.
- (e) The incorrect alternatives shall seem equally plausible to anyone ignorant of the subject. All of the alternatives shall be clearly related to the question and of similar vocabulary, grammatical construction and length.
- (f) In numerical questions, the incorrect answers shall correspond to procedural errors such as corrections applied in the wrong sense or incorrect unit conversions: they shall not be mere random numbers.
- (g) The examination shall ensure that the following objectives are met:
 - (1) Properly discuss with confidence the aircraft and its systems.
 - (2) Ensure safe performance of maintenance, inspections and routine work according to the maintenance manual and other relevant instructions and tasks as appropriate for the type of aircraft, for example troubleshooting, repairs, adjustments, replacements, rigging and functional checks such as engine run, etc., if required.
 - (3) Correctly use all technical literature and documentation for the aircraft.
 - (4) Correctly use specialist/special tooling and test equipment, perform removal and replacement of components and modules unique to type, including any on-wing maintenance activity
- (h) The following conditions apply to the examination:
 - (1) The maximum number of consecutive attempts is three. Further sets of three attempts are allowed with a 1 year waiting period between sets. A waiting period of 30 days is required after the first failed attempt within one set, and a waiting period of 60 days is required after the second failed attempt.
 - (2) The type examination shall be passed and the required practical experience shall be completed within the 3 years preceding the application for the rating endorsement on the aircraft maintenance licence.

² For the purpose of this point 5, a 'chapter' means each one of the rows preceded by a number in the tables contained in points 3.1(e) and 3.2(b).

- (3) Type examination shall be performed with at least one examiner present. The examiner(s) shall not have been involved in the applicant's training.
- (i) A written and signed report shall be made by the examiner(s) to explain why the candidate has passed or failed.

6. On the Job Training

On the Job Training (OJT) shall be approved by the LYCAA

It shall be conducted at and under the control of a maintenance organisation appropriately approved for the maintenance of the particular aircraft type and shall be assessed by designated assessors appropriately qualified.

It shall have been started and completed within the 3 years preceding the application for a type rating endorsement.

(a) Objective:

The objective of OJT is to gain the required competence and experience in performing safe maintenance.

(b) Content:

OJT shall cover a cross section of tasks acceptable to the LYCAA. The OJT tasks to be completed shall be representative of the aircraft and systems both in complexity and in the technical input required to complete that task. While relatively simple tasks may be included, other more complex maintenance tasks shall also be incorporated and undertaken as appropriate to the aircraft type.

Each task shall be signed off by the student and countersigned by a designated supervisor. The tasks listed shall refer to an actual job card/work sheet, etc.

The final assessment of the completed OJT is mandatory and shall be performed by a designated assessor appropriately qualified.

The following data shall be addressed on the OJT worksheets/logbook:

- (1) Name of Trainee;
- (2) Date of Birth;
- (3) Approved Maintenance Organisation;
- (4) Location;
- (5) Name of supervisor(s) and assessor, (including licence number if applicable);
- (6) Date of task completion;
- (7) Description of task and job card/work order/tech log, etc.;
- (8) Aircraft type and aircraft registration;
- (9) Aircraft rating applied for.

In order to facilitate the verification by the LYCAA, demonstration of the OJT shall consist of (i) detailed worksheets/logbook and (ii) a compliance report demonstrating how the OJT meets the requirement of this Part.

Appendix IV

Experience requirements for extending a LYCAR.Part-66 Aircraft Maintenance Engineer Licence

The table below shows the experience requirements for adding a new category or subcategory to an existing LYCAR.Part-66 licence.

The experience shall 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 LYCAR.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		2 years	6 months	2 years	1 year
A4	6 months	6 months	6 months	—	2 years		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	6 months	2 years	None
B1.3	6 months	6 months	None	6 months	6 months	6 months	—	6 months	1 year	6 months
B1.4	6 months	6 months	6 months	None	2 years	6 months	2 years	—	2 years	6 months
B2	6 months	6 months	6 months	6 months	1 year		1 year	1 year	—	1 year
B3	6 months	None	6 months	6 months	2 years	6 months	2 years	1 year	2 years	—

Appendix V**Application Form — LYCAA Form 19**

- (1) This Appendix contains an example of the form used for application for the aircraft maintenance licence referred to in LYCAR.Part-66 .
- (2) The LYCAA may modify the LYCAA Form 19 only to include additional information necessary to support the case where the requirements permit or require the aircraft maintenance licence issued in accordance with LYCAR.Part-66 to be used outside the requirement of LYCAR.Part-M and LYCAR.Part-145.

APPLICATION FOR INITIAL / AMENDMENT / RENEWAL OF LYCAR.66 AIRCRAFT MAINTENANCE ENGINEER LICENCE (AMEL)						LYCAA FORM 19 (Page 1)	
APPLICANTS DETAILS :							
Name :							
Address :							
Phone :		Fax (optional) :					
Email (optional) :							
Nationality :		Date and Place of Birth :					
LYCAR.Part-66 AMEL DETAILS (if applicable) :							
Licence No :		Date of Issue :					
EMPLOYER'S DETAILS :							
Name :							
Address :							
Maintenance Organisation Reference :		Approval					
Phone :		Fax :					
APPLICATION FOR: (Tick the relevant box or boxes)							
Initial AML	<input type="checkbox"/>	Amendment of AML	<input type="checkbox"/>	Renewal of AML	<input type="checkbox"/>		
Rating		A	B1	B2	B3		C
Turbine Aeroplane		<input type="checkbox"/>	<input type="checkbox"/>				
Piston-engine Aeroplane		<input type="checkbox"/>	<input type="checkbox"/>				
Turbine Helicopter		<input type="checkbox"/>	<input type="checkbox"/>				

Piston-engine Helicopter	<input type="checkbox"/>	<input type="checkbox"/>			
Avionics			<input type="checkbox"/>		
Piston-engine non-pressurised airplane of 2000 kg MTOM and below				<input type="checkbox"/>	
Large aircraft					<input type="checkbox"/>
Aircraft other than large aircraft					<input type="checkbox"/>
Aircraft type rating endorsement / sub-group rating endorsement / group rating endorsement (if applicable) : (specify the type rating according to Appendix I of the AMC of LYCAR.Part-66,with the engine between brackets) OR limitation removal (<i>delete as appropriate</i>)(if applicable)					
I wish to apply for initial/amendment/renewal of LYCAR.Part-66 AMEL as indicated and confirm that the information contained in this form was correct at the time of application.					
I also understand that any incorrect information could disqualify me from holding a LYCAR.Part-66 AMEL.					
Signed :			Name :		
Date :					

APPLICATION FOR INITIAL/AMENDMENT/RENEWAL OF CAR.66 AIRCRAFT ENGINEER MAINTENANCE LICENCE (AMEL)	LYCAA FORM 19 (Page 2)
MAINTENANCE EXPERIENCE ON AIRCRAFT :	SIGNATURE OF CONFIRMATION :
I wish to claim the following credits (if applicable) :	
Experience credit due LYCAR.Part-147 training	
Examination credit due equivalent exam certificates	
Please enclose all relevant certificates	
Recommendation (if applicable): It is hereby certified that the applicant has met the relevant maintenance knowledge and experience requirements of LYCAR.Part-66 and it is recommended that the LYCAA grants or endorses the LYCAR.Part-66 AMEL.	

Signed :		Name :	
Position :		Date :	

LYCAA FORM 19 Issue 1

Appendix VI

Aircraft Maintenance Engineer Licence referred to in LYCAR.Part-66 — LYCAA Form 26

1. An example of the aircraft maintenance licence referred to LYCAR.Part-66 can be found on the following pages.
2. The document shall 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 an aircraft maintenance licence issued in accordance with LYCAR.Part-66 .
3. The document may be printed in the English and/or the official language of the State of Libya, except that if the official language of the State of Libya is used, a second English copy shall be attached for any licence holder that works outside the State of Libya to ensure understanding for the purpose of mutual recognition.
4. Each licence holder shall 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 of the aircraft maintenance licence contained herein.
6. The document may be only prepared by the LYCAA.
 - (i) The preparation of any change to an existing aircraft maintenance licence may be carried out by the LYCAA .
7. The 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.
8. Failure to comply with paragraph 7 may invalidate the document and could lead to the holder not being permitted to hold any certification privilege and may result in prosecution under national law.
9. Reserved.
10. The annex to LYCAA Form 26 is optional and may only be used to include national privileges, where such privileges are covered by the national regulation outside the scope of LYCAR.Part-66 .
11. For information the actual LYCAR.Part-66 aircraft maintenance engineer licence issued by the LYCAA may have the pages in a different order and may not have the divider lines.
12. With regard to the aircraft type rating page the LYCAA 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.
13. Notwithstanding 13, each page issued will be in this format and contain the specified information for that page.
14. The licence shall clearly indicate that the limitations are exclusions from the certification privileges. If there are no limitations applicable, the limitations page will be issued stating 'No limitations'.
15. 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.
16. Example of Aircraft Maintenance Engineer Licence referred to in LYCAR.Part-66.

<p>I. STATE OF LIBYA</p> <div style="text-align: center;">  </div> <p>II. LYCAR-66 Aircraft Maintenance ENGINEER Licence</p> <p>III. AMEL N°</p> <p>LYCAA Form 26</p>	<p>IVa. Full name of holder :</p> <hr/> <p>IVb. Date and place of birth:</p> <hr/> <p>V. Address of holder:</p> <hr/> <p>VI. Nationality of holder:</p> <hr/> <p>VII. Signature of holder:</p> <div style="border: 1px solid black; height: 150px; margin-top: 10px;"></div> <hr/> <p>III. AMEL N°:</p>
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VIII. CONDITIONS:

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

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

This licence when endorsed with an aircraft rating meets the intent of ICAO annex 1.
The privileges of the holder of this licence are prescribed by LYCAR.Part-66 .

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

The privileges of this licence may not be exercised unless in the preceding two year period the holder has had either 6 months of maintenance experience in accordance with the privileges granted by the licence, or met the provision for the issue of the appropriate privileges.

AMEL N°:

IX. LYCAR.66 CATEGORIES					
VALIDITY	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	
Piston-engine non pressurised aeroplanes of 2000Kg MTOM and below	n/a	n/a	n/a		n/a
X. Signature of issuing an authorized officer & date					
XI. Seal or stamp of LYCAA					
III. AMEL N°:					

XII. LYCAR.66 aircraft ratings		
Aircraft Rating	Category	Stamp & Date

XIII. LYCAR.66 limitations

III. AMEL N°:		

Valid until:
III. AMEL N°:

PART 147 - TRAINING ORGANISATION REQUIREMENTS

147.1

For the purpose of this Part, Libyan Civil Aviation Authority (LYCAA) whose authority shall cover:

1. the organisations having their principle place of business located in the State of Libya territory
2. the organisations having their principle place of business located in the ICAO contracting Member State.

SECTION A
TECHNICAL REQUIREMENTS
SUBPART A - GENERAL

147. A.05 Scope

This section establishes the requirements to be met by organisations seeking approval to conduct training and examination as specified in (LYCAR.Part-66).

147. A.10 General

A training organisation shall be an organisation or part of an organisation registered as a legal entity.

147. A.15 Application

- (a) An application for an approval or for the change of an existing approval shall be made on made a form and in a manner established by LYCAA.
- (b) application for an approval or change to an approval shall include the following information:
 - (1) the registered name and address of the applicant;
 - (2) the address of the organisation requiring the approval or change to the approval;
 - (3) the intended scope of approval or change to the scope of approval;
 - (4) the name and signature of the accountable manager;
 - (5) the date of application.

SUBPART B
ORGANISATIONAL REQUIREMENTS

147. A.100 Facility requirements

- (a) The size and structure of facilities shall ensure protection from the prevailing weather elements. and proper operation of all planned training and examination on any particular day.
- (b) Fully enclosed appropriate accommodation separate from other facilities shall be provided for the instruction of theory and the conduct of knowledge examinations.
 - (1) The maximum number of students undergoing knowledge training during any training course shall not exceed 28
 - (2) The size of accommodation for examination purposes shall be such that no student can read the paperwork or computer screen of any other student from his/her position during examinations.
- (c) The point (b) accommodation environment shall be maintained such that students are able to concentrate on their studies or examination as appropriate, without undue distraction or discomfort.
- (d) In the case of a basic training course, basic training workshops and/or maintenance facilities separate from training classrooms shall be provided for practical instruction appropriate to the planned training course. If, however, the organisation is unable to provide such facilities, arrangements may be made with another organisation to provide such workshops and/or maintenance facilities, in which case a written agreement shall be made with such organisation specifying the conditions of access and use thereof. The LYCAA shall require access to any such contracted organisation and the written agreement shall specify this access.
- (e) In the case of an aircraft type/task training course access, shall be provided to appropriate facilities containing examples of aircraft type as specified in point 147.A.115 (d).
- (f) The maximum number of students undergoing practical training during any training course shall not exceed 15 per supervisor or assessor.
- (g) Office accommodation shall be provided for instructors, knowledge examiners and practical assessors of a standard to ensure that they can prepare for their duties without undue distraction or discomfort.
- (h) Secure storage facilities shall be provided for examination papers and training records. The storage environment shall be such that documents remain in good condition for the retention period as specified in point 147.A.125. The storage facilities and office accommodation may be combined, subject to adequate security.
- (i) A library shall be provided containing all technical material appropriate to the scope and level of training undertaken.

147. A.105 Personnel requirements

- (a) The organisation shall appoint an accountable manager who has corporate authority for ensuring that all training commitments can be financed and carried out to the standard required by this Part.
- (b) A person or group of persons, whose responsibilities include ensuring that the maintenance training organisation is in compliance the requirements of this Part, shall be nominated. Such person(s) must be responsible to the accountable manager. The senior person or one person from the group of persons may also be the accountable manager subject to meeting the requirements for the accountable manager as defined in point (a).
- (c) The maintenance-training organisation shall contract sufficient staff to plan/perform knowledge and practical training, conduct knowledge examinations and practical assessments in accordance with the approval.

- (d) By derogation to point (c), when another organisation is used to provide practical training and assessments, such other organisation's staff may be nominated to carry out practical training and assessments.
- (e) Any person may carry out any combination of the roles of instructor, examiner and assessor, subject to compliance with point (f).
- (f) The experience and qualifications of instructors, knowledge examiners and practical assessors shall be established in accordance with criteria published or in accordance with a procedure and to a standard agreed by the LYCAA.
- (g) The knowledge examiners and practical assessors shall be specified in the organisation exposition for the acceptance of such staff.
- (h) Instructors and knowledge examiners shall undergo updating training at least every 24 months relevant to current technology, practical skills, human factors and the latest training techniques appropriate to the knowledge being trained or examined

147. A.110 Records of instructors, examiners and assessors

- (a) The organisation shall maintain a record of all instructors, knowledge examiners and practical assessors. These records shall reflect the experience and qualification, training history and any subsequent training undertaken.
- (b) Terms of reference shall be drawn up for all instructors, knowledge examiners and practical assessors.

147. A.115 Instructional equipment

- (a) Each classroom shall have appropriate presentation equipment of a standard that ensures students can easily read presentation text/drawings/diagrams and figures from any position in the classroom.
Presentation equipment shall include representative synthetic training devices to assist students in their understanding of the particular subject matter where such devices are considered beneficial for such purposes.
- (b) The basic training workshops and/or maintenance facilities as specified in point 147.A.100 (d) must have all tools and equipment necessary to perform the approved scope of training.
- (c) The basic training workshops and/or maintenance facilities as specified in point 147.A.100 (d) must have an appropriate selection of aircraft, engines, aircraft parts, and avionics equipment.
- (d) The aircraft type training organisation as specified in point 147.A.100 (e) must have access to the appropriate aircraft type. Synthetic training devices may be used when such synthetic training devices ensure adequate training standards.

147. A.120 Maintenance training material

- (a) (a) Maintenance training course material shall be provided to the student and cover as applicable:
 - (1) the basic knowledge syllabus specified in LYCAR.Part-66 for the relevant aircraft maintenance licence category or subcategory and,
 - (2) the type course content required by LYCAR.Part-66 for the relevant aircraft type and aircraft maintenance licence category or subcategory.
- (b) Students shall have access to examples of maintenance documentation and technical information of the library as specified in point 147.A.100 (i).

147. A.125 Records

The organisation shall keep all student training, examination and assessment records for an unlimited period

147. A.130 Training procedures and quality system

- (a) The organisation shall establish procedures acceptable to the LYCAA to ensure proper training standards and compliance with all relevant requirements in this Part.
- (b) The organisation shall establish a quality system including:
 - (1) an independent audit function to monitor training standards, the integrity of knowledge examinations and practical assessments, compliance with and adequacy of the procedures, and
 - (2) a feedback system of audit findings to the person(s) and ultimately to the accountable manager referred to in point 147.A.105(a) to ensure, as necessary, corrective action.

147. A.135 Examinations

- (a) The examination staff shall ensure the security of all questions.
- (b) Any student found during a knowledge examination to be cheating or in possession of material pertaining to the examination subject other than the examination papers and associated authorised documentation shall be disqualified from taking the examination and may not take any examination for at least 12 months after the date of the incident. The LYCAA shall be informed of any such incident together with the details of any enquiry within one calendar month
- (c) Any examiner found during a knowledge examination to be providing question answers to any student being examined shall be disqualified from acting as an examiner and the examination declared void. The LYCAA must be informed of any such occurrence within one calendar month.

147. A.140 Maintenance training organisation exposition

- (a) (a) The organisation shall provide an exposition for use by the organisation describing the organisation and its procedures and containing the following information:
 - (1) a statement signed by the accountable manager confirming that the maintenance training organisation exposition and any associated manuals define the maintenance training organization's compliance with this Part and shall be complied with at all times.
 - (2) the title(s) and name(s) of the person(s) nominated in accordance with point 147.A.105 (b).
 - (3) the duties and responsibilities of the person(s) specified in point 2, including matters on which they may deal directly with the LYCAA on behalf of the maintenance training organisation.
 - (4) a maintenance training organisation chart showing associated chains of responsibility of the person(s) specified in point (a)(2).
 - (5) a list of the training instructors, knowledge examiners and practical assessors.
 - (6) a general description of the training and examination facilities located at each address specified in the maintenance training organisation's approval certificate, and if appropriate any other location, as required by point 147.A.145(b).
 - (7) a list of the maintenance training courses which form the extent of the approval.
 - (8) the maintenance-training organisation's exposition amendment procedure.
 - (9) the maintenance-training organisation's procedures, as required by point 147.A.130 (a).
 - (10) the maintenance training organisation's control procedure, as required by 147.A.145(c), when authorised to conduct training, examination and assessments in locations different from those specified in point 147.A.145(b).
 - (11) a list of the locations pursuant to point 147.A.145 (b).
 - (12) a list of organisations, if appropriate, as specified in point 147.A.145 (d).

- (b) The maintenance-training organisation's exposition and any subsequent amendments shall be approved by the LYCAA.
- (c) Notwithstanding, point (b) minor amendments to the exposition may be approved through an exposition procedure (hereinafter called indirect approval).

147. A.145 Privileges of the Maintenance Training Organisation (MTO)

- (a) The maintenance-training organisation may carry out the following as permitted by and in accordance with the maintenance training organisation exposition:
 - (1) basic training courses to the LYCAR.Part-66 syllabus, or part thereof.
 - (2) aircraft type/task training and courses in accordance with LYCAR.Part-66.
 - (3) the type course examinations on behalf of the LYCAA, except for basic course including the examination of students who did not attend the basic or aircraft type training course at the maintenance-training organisation.
 - (4) the issue of certificates in accordance with LYCAR.Part-66 following successful completion of the approved basic or aircraft type training courses and examinations specified in points (a)(1), (a)(2) and (a)(3), as applicable
- (b) Training, knowledge examinations and practical assessments may only be carried out at the locations identified in the approval certificate and/or at any location specified in the maintenance training organisation exposition.
- (c) By derogation to point (b), the maintenance-training organisation may only conduct training, knowledge examinations and practical assessments in locations different from the point (b) locations in accordance with a control procedure specified in the maintenance training organisation exposition. Such locations need not be listed in the maintenance training organisation exposition.
- (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 LYCAR.Part-66, Appendix I, Modules 1, 2, 3, 4, 5, 6, 8, 9 and 10.
 - (3) The subcontracting of type training and examination is limited to power plant and avionics systems.
- (e) An organisation may not be approved to conduct examinations unless approved to conduct the corresponding training.
- (f) By derogation from point (e), an organisation approved to provide basic knowledge training or type training may also be approved to provide type examination in the cases where type training is not required.

147. A.150 Changes to the maintenance training organisation

- (a) The maintenance training organisation shall notify the LYCAA of any proposed changes to the organisation that affect the approval before any such change takes place, in order to enable the LYCAA to determine continued compliance with this Part and to amend if necessary the maintenance training organisation approval certificate.
- (b) The LYCAA may prescribe the conditions under which the maintenance-training organisation may operate during such changes unless the LYCAA determines that the maintenance training organisation approval must be suspended.
- (c) Failure to inform the LYCAA of such changes may result in suspension or revocation of the maintenance training organisation approval certificate backdated to the actual date of the changes.

147. A.155 Continued validity

- (a) An approval shall be issued for unlimited validity. It shall remain valid subject to:-
 - (1) the organisation remaining in compliance with this Part, in accordance with the provisions related to the handling of findings as specified in point 147.A.160; and
 - (2) the LYCAA being granted access to the organisation to determine continued compliance with this Part; and
 - (3) the certificate not being surrendered or revoked.
- (b) Upon surrender or revocation, the approval shall be returned to LYCAA.

147. A.160 Findings

- (a) A level 1 finding is one or more of the following:
 - (1) 1. any significant non-compliance with the examination process, which would invalidate the examination(s),
 - (2) 2. failure to give the LYCAA access to the organisation's facilities during normal operating hours after two written requests,
 - (3) 3. the lack of an accountable manager,
 - (4) 4. a significant non-compliance with the training process.
- (b) A level 2 finding is any non-compliance with the training process other than level 1 findings.
- (c) A level 3 finding (Recommendation) is a minor irregularity (normally raised against organisation's own procedures or practices) which doesn't lower the standards but may lead to potential non-compliances. Such findings may warrant attention; or action as appropriate to improve the standards and/or achieve a better practice. For Level (3) finding, the Auditor, based on his/her judgement, may grant up to 3 months for the corrective actions to be implemented. However, it is up to the Auditor to extend the timeline based on the corrective action plan provided by the organisation. Not all Level (3) findings shall necessarily warrant corrective actions. This is dealt with on a case-to-case basis.
- (d) After receipt of notification of findings according to (a) , (b) and , if applicable, (c) above, the holder of the maintenance training organisation approval shall define a corrective action plan and demonstrate corrective action to the satisfaction of LYCAA within a period agreed with LYCAA.

SUBPART C
APPROVED BASIC TRAINING COURSE

147. A.200 The approved basic training course

- (a) The approved basic training course shall consist of knowledge training, knowledge examination, practical training and a practical assessment.
- (b) The knowledge-training element shall cover the subject matter for a category or subcategory aircraft maintenance licence as specified in LYCAR.Part-66.
- (c) The knowledge examination element shall cover a representative cross section of subject matter from the point (b) training element.
- (d) The practical training element shall cover the practical use of common tooling/equipment, the disassembly/assembly of a representative selection of aircraft parts and the participation in representative maintenance activities being carried out relevant to the particular LYCAR.Part-66 complete module.
- (e) The practical assessment element shall cover the practical training and determine whether the student is competent at using tools and equipment and working in accordance with maintenance manuals.
- (f) The duration of basic training courses shall be in accordance with Appendix I.
- (g) The duration of conversion courses between (sub) categories shall be determined through an assessment of the basic training syllabus and the related practical training needs.

147. A.205 Basic knowledge examinations

Basic knowledge examinations shall:

- (a) be in accordance with the standard defined in LYCAR.Part-66.
 - (1) Basic knowledge examinations conducted by maintenance training organisations will be deemed to be preparatory examinations to be eligible for appearing in the Knowledge Examinations conducted by LYCAA.
 - (2) Students are eligible to appear for basic knowledge examination conducted by maintenance training organisations, provided they have attended at least 80% of the classes.
- (b) be conducted without the use of training notes.
- (c) cover a representative cross section of subjects from the particular module of training completed in accordance with LYCAR.Part-66.

147. A.210 Basic practical assessment

- (a) Basic practical assessments shall be carried out during the basic maintenance-training course by the nominated practical assessors at the completion of each visit period to the practical workshops/maintenance facility.
- (b) The student shall achieve an assessed pass with respect to point 147.A.200 (e).

SUBPART D
AIRCRAFT TYPE/TASK TRAINING

147. A.300 Aircraft type/task training

A maintenance-training organisation shall be approved to carry out aircraft type and/or task training subject to compliance with the standard specified in point 66.A.45.

147. A.305 Aircraft type examinations and task assessments

A maintenance-training organisation approved in accordance with point 147.A.300 to conduct aircraft type training shall conduct the aircraft type examinations or aircraft task assessments specified in LYCAR.Part-66 subject to compliance with the aircraft type and/or task standard specified in point 66.A.45 of LYCAR.Part-66.

Appendix I
Basic training course duration

The minimum duration of a complete basic training course shall be as follows:

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	2 400	50 to 60
B1.2	2 000	50 to 60
B1.3	2 400	50 to 60
B1.4	2 400	50 to 60
B2	2 400	50 to 60
B3	1 000	50 to 60

Appendix II

Maintenance Training Organisation Approval referred to LYCAR.Part-147 — LYCAA Form 11

STATE OF LIBYA



MAINTENANCE TRAINING AND EXAMINATION ORGANISATION APPROVAL CERTIFICATE

Approval No. [[XXXX]]

Pursuant to LIBYAN AVIATION LAW for the time being in force and subject to the condition specified below, the LYCAA hereby certifies:

[COMPANY NAME AND ADDRESS]

As a maintenance training organisation in compliance with Section A of LYCAR.Part-14 7, approved to provide training and conduct examinations listed in the attached approval schedule and issue related certificates of recognition to students using the above Approval.

CONDITIONS:

1. This approval is limited to that specified in the scope of work section of the approved maintenance training organisation exposition as referred to in Section A of LYCAR.Part-14 7; and
2. This approval requires compliance with the procedures specified in the approved maintenance training organisation exposition; and
3. This approval is valid whilst the approved maintenance training organisation remains in compliance with LYCAR.Part-147;
4. Subject to compliance with the foregoing conditions, this approval shall remain valid for an unlimited duration unless the approval has previously been surrendered, superseded, suspended or revoked.

Date of original issue-----Date of this revision-----

Revision No:-----

Signed-----For the LYCAA:

LYCAA Form 11

MAINTENANCE TRAINING AND EXAMINATION ORGANISATION APPROVAL SCHEDULE

Approval No. [[XXXX]]

Organisation: [COMPANY NAME AND ADDRESS]

CLASS	LICENCE	LIMITATION	
BASIC(**)	B1 (**)	TB1.1	AEROPLANES TURBINE (**)
		TB1 .2	AEROPLANES PISTON (**)
		TB1 .3	HELICOPTERS TURBINE (**)
		TB1 .4	HELICOPTERS PISTON (**)

	82 (**)	TB2	AVIONICS(**)
	83 (**)	TB3 (**)	PISTON-ENGINE NON-PRESSURISED AEROPLANES 2 000 KG MTOM AND BELOW(**)
	A(**)	TA.1	AEROPLANES TURBINE (**)
		TA.2	AEROPLANES PISTON (**)
		TA.3	HELICOPTERS TURBINE (**)
		TA.4	HELICOPTERS PISTON (**)
TYPE / TASK(**)	c (**)	T4 (**)	[QUOTE AIRCRAFT TYPE] (***)
	B1 (**)	T1 (**)	[QUOTE AIRCRAFT TYPE] (***)
	82 (**)	T2 (**)	[QUOTE AIRCRAFT TYPE] (***)
	A (**)	T3 (**)	[QUOTE AIRCRAFT TYPE] (***)
<p>This approval schedule is limited to those trainings and examinations specified in the scope of work section of the approved maintenance training organisation exposition.</p>			
<p>Maintenance Training Organisation Exposition reference: . Date of original issue: . Date of last revision approved: Revision No: . Signed: . For the LYCAA:</p>			
(**) Delete as appropriate if the organisation is not approved.			
(***) Complete with the appropriate rating and limitation.			
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Appendix III

Certificates of Recognition referred to in (LYCAR.Part-147) — LYCAA Forms 148 and 149

1. Basic Training/Examination

The LYCAR.Part-147 basic training certificate template detailed below is to be used for recognition of completion of either the basic training, the basic examination or both the basic training and basic training examinations.

The training certificate shall clearly identify each individual module examination by date passed together with the corresponding version of Appendix I to LYCAR.Part-66.

STATE OF LIBYA



CERTIFICATE OF RECOGNITION

Approval No. [[XXXX]]

This certificate of recognition is issued to:

[NAME]

[DATE and PLACE of BIRTH]

By:

[COMPANY NAME and ADDRESS]

a maintenance-training organisation approved to provide training and conduct examinations with its approval schedule and in accordance with LYCAR.Part-147.

This certificate confirms that the above named person either successfully passed the approved basic training course (**) or the basic examination (**) stated below in compliance with Law No. 6 (2005) for the time being in force.

[BASIC TRAINING COURSE (**) or/and EXAMINATION (**)]

[LIST OF LYCAR.Part-66 MODULES/DATE OF EXAMINATION PASSED]

Date:.....Signed:.....

...

For: [COMPANY NAME]

(**) delete as appropriate

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2. Type Training/Examination

The LYCAR.Part-147 type training certificate template detailed below is to be used for recognition of completion of either the theoretical elements, the practical elements or both the theoretical and practical elements of the type rating training course.

The certificate shall indicate the airframe/engine combination for which the training was imparted.

The appropriate references shall be deleted as applicable and the course type box shall detail whether only the theoretical elements or the practical elements were covered or whether theoretical and practical elements were covered.

The training certificate shall clearly identify if the course is a complete course or a partial course (such as an airframe or power plant or avionic/electrical course) or a difference course based upon the applicant previous experience, for instance A340 (CFM) course for A320 technicians. If the course is not a complete one, the certificate shall identify whether the interface areas have been covered or not.

STATE OF LIBYA



CERTIFICATE OF RECOGNITION

Approval No. [[XXXX]]

This certificate of recognition is issued to:

[NAME]

[DATE and PLACE of BIRTH]

By:

[COMPANY NAME and ADDRESS]

a maintenance-training organisation approved to provide training and conduct examinations with its approval schedule and in accordance with LYCAR.Part-147.

This certificate confirms that the above named person either successfully passed the theoretical (**) and/or the practical elements (**) of the approved type training course stated below and related examinations in compliance with Law No. 6 (2005) for the time being in force.

[AIRCRAFT TYPE TRAINING COURSE (**)]

[START and END DATES]

[SPECIFY THEORITICAL ELEMENTS OR PRACTICAL ELEMENTS]

And/or

[AIRCRAFT TYPE EXAMINATION (**)]

[END DATE]

Date:.....Signed:.....
.....

For: [COMPANY NAME]

(**) delete as appropriate